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GE Consumer & Industrial Appliances

Service Manual & Installation Manual

Split System Air Conditioner

Model numbers:

PRO AIR 107
PRO AIR 109
PRO AIR 112
PRO AIR I109
PRO AIR I112
PRO AIR 218
GE AIR 326
GE AIR 428

1 Summary and features

Model	Remark
PRO AIR 107 IN / PRO AIR 107 OUT	1Ph 230V 50Hz R410A

Model	Remark
PRO AIR 109 IN / PRO AIR 109 OUT PRO AIR 112 IN / PRO AIR 112 OUT PRO AIR I109 IN / PRO AIR I109 OUT PRO AIR I112 IN / PRO AIR I112 OUT	1Ph 230V 50Hz R410A

Model	Remark
PRO AIR 218 IN / PRO AIR 218 OUT	1Ph 230V 50Hz R410A

Model	Remark
GE AIR 326 IN1 / GE AIR 326 IN2 / GE AIR 326 OUT	1Ph 230V 50Hz R407C

Model	Remark
GE AIR 428 IN / GE AIR 428 OUT	1Ph 230V 50Hz R407C

2 Technical and specifications

Model			PRO AIR 107 IN / PRO AIR 107 OUT		PRO AIR 109 IN / PRO AIR 109 OUT	
Function			Cooling	Heating	Cooling	Heating
Rated voltage			230V			
Rated frequency			50Hz			
Capacity		(W)	2000	2200	2500	2600
Nominal power		(W)	660	700	765	800
Max. power		(W)	900	920	990	1050
Greatest currency		(A)	4.1	4.3	4.8	5.5
Air flow		(m3/h)	360		450	
Dry capacity		(L/h)	0.7		1.2	
C.O.P/EER		(W/W)	3.05	3.15	3.2	3.2
Indoor unit	Model		KFR-20G/NaA121-E		KFR-25G/NaA121-E	
	Fan speed (r/min)(H/M/L)		1000/940/880		1160/1010/890	
	Output power (W)		8		14	
	Auxiliary electric heater power		/			
	Fan capacitor		1			
	Fan motor running current		0.035		0.12	
	Fan type-piece		Axial flow fan－1			
	Diameter-length (mm)		Φ97×583			
	Evaporator		Aluminum fin-copper tube			
	Pipe diameter		Φ7			
	Row-fin distance (mm)		2-1.4			
	Developed area of heat exchanger (I×H×L)		580mm ×228.6mm×25.4mm			
	Swing motor model		MP24GA			
	Motor power (W)		2			
	Fuse (A)		PCB3.15A Transformer 0.2A			
	Noise (sound pressure level) dB(A)		41/38/35		42/39/36	
	Noise (sound pressure level) dB(A)		51/49/45		52/49/46	
	Outline dimension (W/D/H) (mm)		770×180×250			
	Package dimension (W/D/H) (mm)		855×270×336			
	Net weight/gross weight (kg)		8.5/12.5			

Outdoor unit	Model			PRO AIR 107 IN / PRO AIR 107 OUT	PRO AIR 109 IN / PRO AIR 109 OUT
	Compressor type			GK080PAD	C-1RV096H1A
	Compressor type			Rotary type	
	Locked rotor current			17	17
	Compressor running current			3.2	3.8
	Compressor input power			682	810
	Compressor overload model			M RA12009-12026	M RA98635-9201
	Throttling method			Capillary	
	Starting mode			Capacitor CBB65 (22.5uF/450VAC)	
	Working temperature range			－7～43℃	
	Condenser			Aluminum fin-copper tube	
	Pipe diameter			Φ9.52	
	Row-fin distance (mm)			2-1.6	2-1.4
	Developed area of heat exchanger (I×H×L)			673×406×44	791×508×44
	Fan motor speed (rpm)			950	830
	Motor rated power (W)			20	30
	Fan motor running current (A)			0.42	0.26
	Fan capacitor (μf)			1.5	2
	Fan type-piece			/	
	Fan type-piece			Axial flow fan -1	
	Fan diameter (mm)			Φ320	Φ400
	Defrosting method			Auto	
	Climate type			T1	
	Insulation class			I	
	Waterproof level			IP24	
	Maximum working pressure of exhaust side (Mpa)			3.8	
	Maximum working pressure of exhaust side (Mpa)			1.2	
	Noise（sound pressure level）dB(A)			52	56
	Noise (sound pressure level) dB(A)			62	66
	Outline dimension (W/D/H)(mm)			660×260×430	848×320 ×540
	Package dimension (W/D/H)(mm)			765×350×500	878×360 ×600
	Net weight/gross weight (kg)			25/29	30/34
	Refrigerant/refrigerant charge (kg)			R410A /0.88	R410A /1.1
Connection pipe	Length			4	
	Outer diameter	Liquid pipe	(mm)	Φ6	
		Gas pipe	(mm)	Φ9.52	
	Maximum distance	Height	(m)	5	
		Length	(m)	10	

Model			PRO AIR 112 IN		PRO AIR I109 IN	
Function			Cooling	Heating	Cooling	Heating
Rated voltage			230V			
Rated frequency			50Hz			
Capacity		(W)	3200	3400	2500	2700
Nominal power		(W)	1060	1220	730	800
Max. power		(W)	1390	1370	1246	1297
Greatest currency		(A)	7.2	7.4	5.7	6
Air flow		（m3/h）	450		450	
Dry capacity		(L/h)	1.2		1.2	
C.O.P/EER		(W/W)	3	2.8	3.4	3.4
Indoor unit	Model		KFR-32G/NaA121-E		KFR-25G/NaA12F-E	
	Fan speed (r/min)(H/M/L)		1160/1010/890		1190/1090/990	
	Output power (W)		14		14	
	Auxiliary electric heater power		/			
	Fan capacitor		1			
	Fan motor running current		0.12		0.12	
	Fan type-piece		Cross flow fan-1			
	Diameter-length (mm)		Φ97×583			
	Evaporator		Aluminum fin-copper tube			
	Pipe diameter		Φ7			
	Row-fin distance (mm)		2-1.4			
	Developed area of heat exchanger (I×H×L)		580mm ×228.6mm×25.4mm			
	Swing motor model		MP24GA			
	Motor power (W)		2			
	Fuse (A)		PCB3.15A Transformer 0.2A			
	Noise (sound pressure level) dB(A)		42/39/36		42/39/36	
	Noise (sound pressure level) dB(A)		52/49/46		52/49/46	
	Outline dimension (W/D/H) (mm)		770×180×250			
	Package dimension (W/D/H) (mm)		855×270×336			
	Net weight/gross weight (kg)		8.5/12.5			

Outdoor unit	Model			PRO AIR 112 OUT	PRO AIR 109 OUT
	Compressor type			C-RV133H1A	EU1011DV
	Compressor type			Rotary type	
	Locked rotor current			24	33.5
	Compressor running current			5.25	4
	Compressor input power			1125	628
	Compressor overload model			B210-145-241E	4CYC11233
	Throttling method			Capillary	
	Starting mode			Capacitor	
	Working temperature range			－7～43℃	
	Condenser			Aluminum fin-copper tube	
	Pipe diameter			Φ9.52	
	Row-fin distance (mm)			2-1.4	2-1.4
	Developed area of heat exchanger (I×H×L)			791×508×44	645×508×44
	Fan motor speed (rpm)			830	830
	Motor rated power (W)			30	30
	Fan motor running current (A)			0.26	0.3
	Fan capacitor (μf)			2.5	2.5
	Fan type-piece			/	
	Fan type-piece			Axial flow fan-1	
	Fan diameter (mm)			Φ400	Φ400
	Defrosting method			Auto	
	Climate type			T1	
	Insulation class			I	
	Waterproof level			IP24	
	Maximum working pressure of exhaust side (Mpa)			3.8	
	Maximum working pressure of exhaust side (Mpa)			1.2	
	Noise (sound pressure level) dB(A)			56	54
	Noise (sound pressure level) dB(A)			66	64
	Outline dimension (W/D/H) (mm)			848×320 ×540	848×320 ×540
	Package dimension (W/D/H) (mm)			878×360 ×600	878×360 ×600
	Net weight/gross weight (kg)			30/34	41/43
	Refrigerant/refrigerant charge (kg)			R410A /1.3	R410A /1.2
Connection pipe	Length			4	
	Outer diameter	Liquid pipe	(mm)	Φ6	
		Gas pipe	(mm)	Φ9.52	
	Maximum distance	Height	(m)	5	
		Length	(m)	10	

Model			PRO AIR I112 IN		PRO AIR 218 IN	
Function			Cooling	Heating	Cooling	Heating
Rated voltage			230V			
Rated frequency			50Hz			
Capacity		(W)	3200	3400	2500×2	2800×2
Nominal power		(W)	1000	1100	830×2	900×2
Max. power		(W)	1361	1383	1120×2	1100×2
Greatest currency		(A)	5.9	6.1	5.9×2	5.4×2
Air flow		(m3/h)	450		450	
Dry capacity		(L/h)	1.2		1.2×2	
C.O.P/EER		(W/W)	3.2	3.1	3	3.1
Indoor unit	Model		KFR-32G/NaA12F-E		KFR-25X2G/NaA121-E	
	Fan speed (r/min)(H/M/L)		1190/1090/990		1160/1010/890	
	Output power (W)		14		14	
	Auxiliary electric heater power		/			
	Fan capacitor		1			
	Fan motor running current		0.12		0.12	
	Fan type-piece		Cross flow fan-1			
	Diameter-length (mm)		Φ97×583			
	Evaporator		Aluminum fin-copper tube			
	Pipe diameter		Φ7			
	Row-fin distance (mm)		2-1.4			
	Developed area of heat exchanger (I×H×L)		580mm ×228.6mm×25.4mm			
	Swing motor model		MP24GA			
	Motor power (W)		2			
	Fuse (A)		PCB3.15A Transformer 0.2A			
	Noise (sound pressure level) dB(A)		42/39/36		42/39/36	
	Noise (sound pressure level) dB(A)		52/49/46		52/49/46	
	Outline dimension (W/D/H) (mm)		770×180×250			
	Package dimension (W/D/H) (mm)		855×270×336			
	Net weight/gross weight (kg)		8.5/12.5			

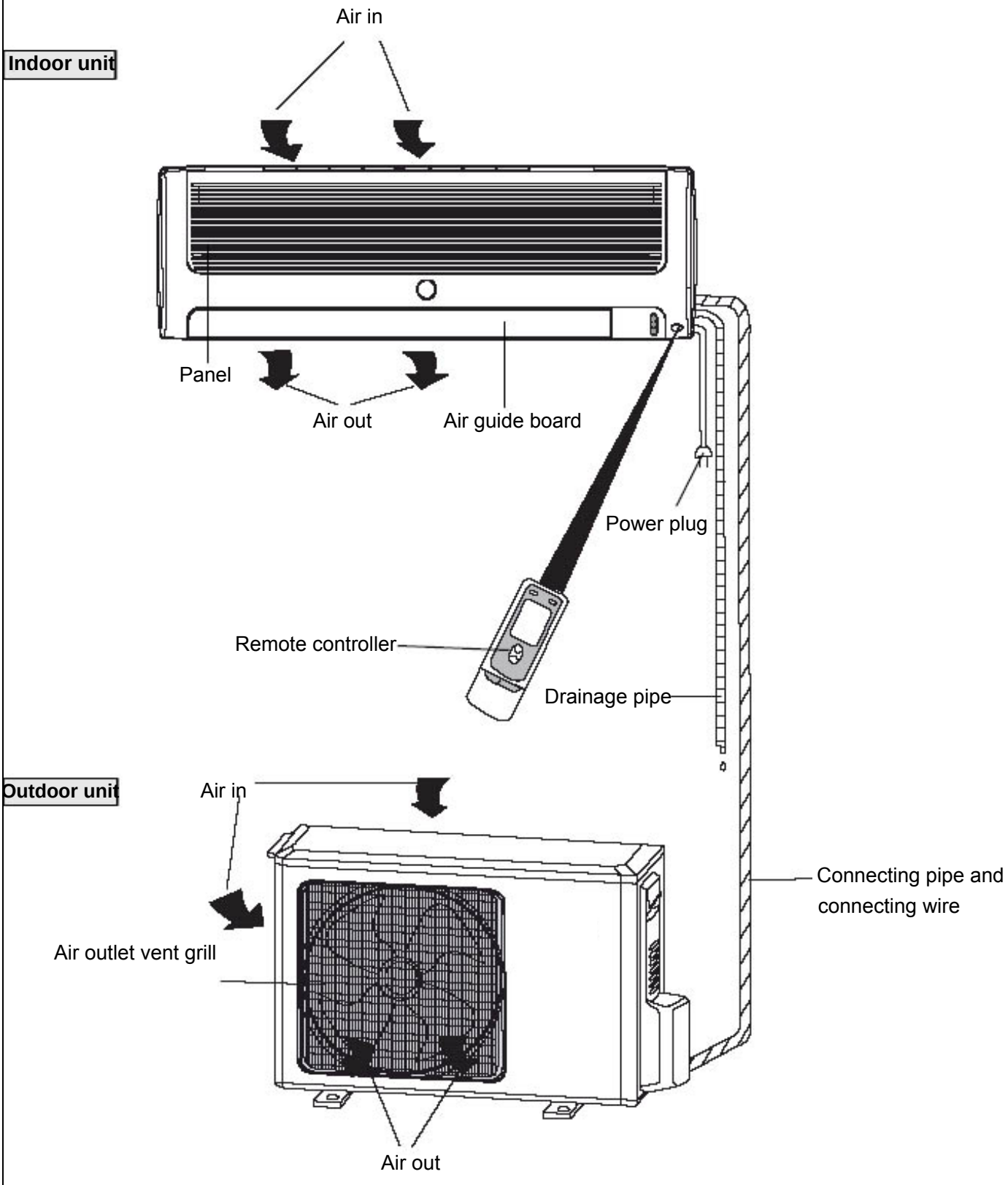
Outdoor unit	Model			PRO AIR I112 OUT	PRO AIR 218 OUT
	Compressor type			EU1011DV	5PS108EAA22
	Compressor type			Rotary type	
	Locked rotor current			33.5	18
	Compressor running current			4	4.05
	Compressor input power			628	880
	Compressor overload model			4CYC11233	7100819 (KA-122-LPD021A)
	Throttling method			Capillary	
	Starting mode			Capacitor	
	Working temperature range			－7～43℃	
	Condenser			Aluminum fin-copper tube	
	Pipe diameter			Φ9.52	
	Row-fin distance (mm)			2-1.4	2-1.8
	Developed area of heat exchanger (I×H×L)			645×508×44	730×660×44
	Fan motor speed (rpm)			830	815
	Motor rated power (W)			30	60
	Fan motor running current (A)			0.3	0.6
	Fan capacitor (μf)			2.5	3
	Fan type-piece			/	
	Fan type-piece			Axial flow fan-1	
	Fan diameter (mm)			Φ400	Φ400
	Defrosting method			Auto	
	Climate type			T1	
	Insulation class			I	
	Waterproof level			IP24	
	Maximum working pressure of exhaust side (Mpa)			3.8	
	Maximum working pressure of exhaust side (Mpa)			1.2	
	Noise (sound pressure level) dB(A)			54	60
	Noise (sound pressure level) dB(A)			64	70
	Outline dimension (W/D/H) (mm)			848×320 ×540	950×340×685
	Package dimension (W/D/H) (mm)			878×360 ×600	1100×450×750
	Net weight/gross weight (kg)			41/43	65/70
	Refrigerant/refrigerant charge (kg)			R410A /1.2	R410A /0.9×2
Connection pipe	Length			4	
	Outer diameter	Liquid pipe	(mm)	Φ6	
		Gas pipe	(mm)	Φ9.52	
	Maximum distance	Height	(m)	5	
		Length	(m)	10	

Model			GE AIR 326 IN1 / GE AIR 326 IN2 / GE AIR 326 OUT	GE AIR 428 IN / GE AIR 428 OUT
Function			Cooling	Cooling
Rated voltage			230V	
Rated frequency			50Hz	
Capacity		(W)	6800 (3200+1800×2)	7200 （1800X4）
Nominal power		(W)	6800 (3200+1800×2)	2900 （1450X2）
Max. power		(W)	3400 (1700×2)	3400 （1700X2）
Greatest currency		(A)	6.5+6.5	6.5+6.5
Air flow		(m3/h)	450	450
Dry capacity		(L/h)	1.2×2	1.2×2
C.O.P/EER		(W/W)	2.4	2.5
Indoor unit	Model		KF-18X2G/NA12-E / KF-32G/NA12-E	KF-18X4G/NA12-E
	Fan speed (r/min) (H/M/L)		1160/1010/890	1160/1010/890
	Output power (W)		14	14
	Auxiliary electric heater power		/	
	Fan capacitor		1	
	Fan motor running current		0.12	0.12
	Fan type-piece		Cross flow fan-1	
	Diameter-length (mm)		Φ97×583	
	Evaporator		Aluminum fin-copper tube	
	Pipe diameter		Φ7	
	Row-fin distance (mm)		2-1.4	
	Developed area of heat exchanger (I×H×L)		580mm ×228.6mm×25.4mm	
	Swing motor model		MP24GA	
	Motor power (W)		2	
	Fuse (A)		PCB3.15A Transformer 0.2A	
	Noise (sound pressure level) dB(A)		42/39/36	42/39/36
	Noise (sound pressure level) dB(A)		52/49/46	52/49/46
	Outline dimension (W/D/H) (mm)		770×180×250	
	Package dimension (W/D/H) (mm)		855×270×336	
	Net weight/gross weight (kg)		8.5/12.5	

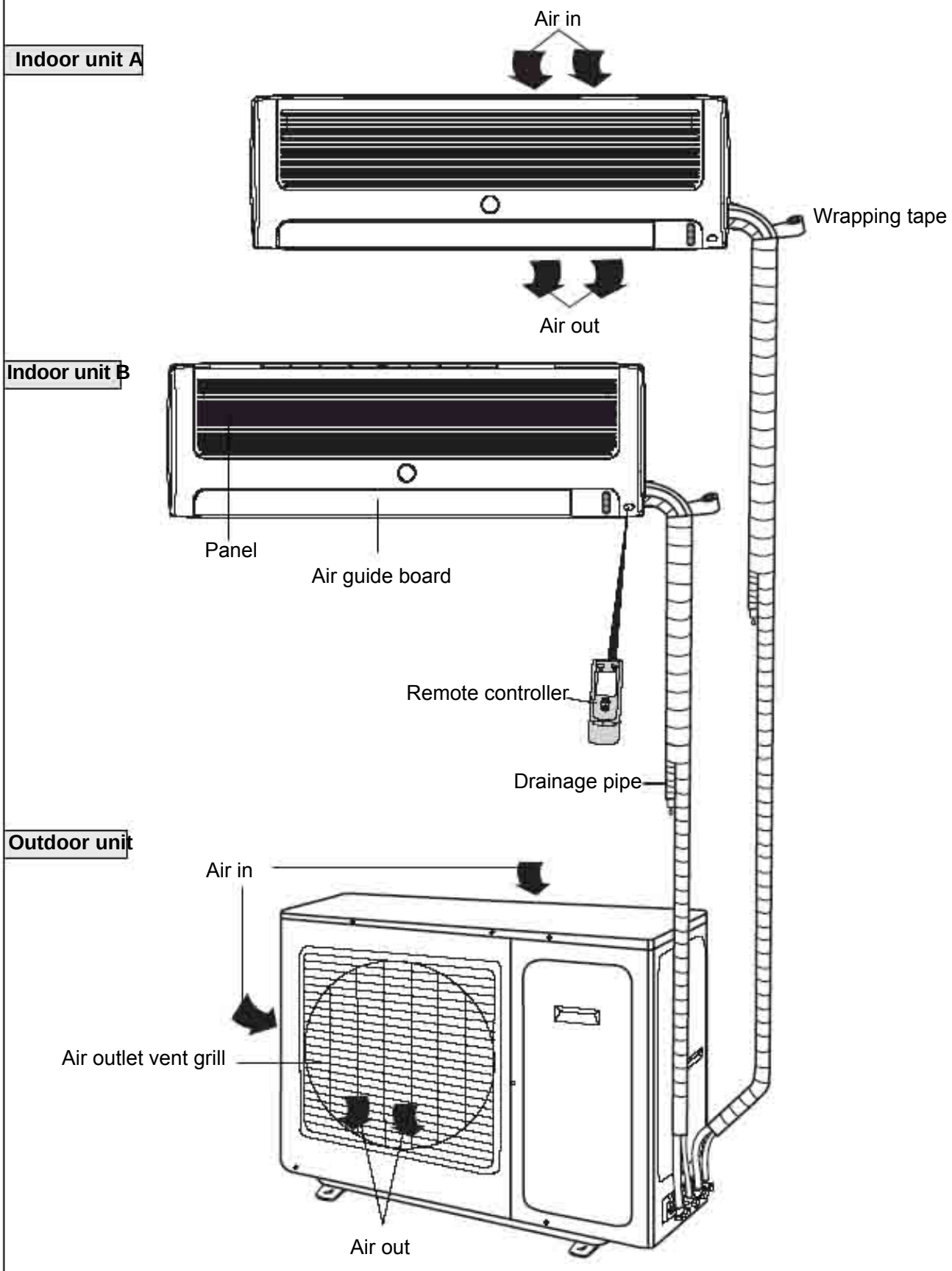
Outdoor unit	Model			GE AIR 326 IN1 / GE AIR 326 IN2 / GE AIR 326 OUT	GE AIR 428 IN / GE AIR 428 OUT
	Compressor type			C-RV237H01AA	C-RV237H01AA
	Compressor type			Rotary type	
	Locked rotor current			31	31
	Compressor running current			6.3	6.3
	Compressor input power			1100	1100
	Compressor overload model			MRA98619-9200	MRA98619-9200
	Throttling method			Capillary	
	Starting mode			Capacitor	
	Working temperature range			－5～43℃	
	Condenser			Aluminum fin-copper tube	
	Pipe diameter			Φ9.52	
	Row-fin distance (mm)			2-1.8	2-1.8
	Developed area of heat exchanger (I×H×L)			791×508×44	791×508×44
	Fan motor speed (rpm)			780	780
	Motor rated power (W)			60	60
	Fan motor running current (A)			0.56	0.56
	Fan capacitor (μf)			3	3
	Fan type-piece			/	
	Fan type-piece			Axial flow fan-1	
	Fan diameter (mm)			Φ460	Φ460
	Defrosting method			Auto	
	Climate type			T1	
	Insulation class			I	
	Waterproof level			IP24	
	Maximum working pressure of exhaust side (Mpa)			2.5	
	Maximum working pressure of exhaust side (Mpa)			0.6	
	Noise (sound pressure level) dB(A)			58	58
	Noise (sound pressure level) dB(A)			68	68
	Outline dimension (W/D/H) (mm)			950×412 ×840	950×412 ×840
	Package dimension (W/D/H) (mm)			1100×450×920	1100×450×920
	Net weight/gross weight (kg)			72/77	72/77
	Refrigerant/refrigerant charge (kg)			R407C /1.27×2	R407C /1.27×2
Connection pipe	Length			Length of connecting tube	
	Outer diameter	Liquid pipe	(mm)	Φ6	
		Gas pipe	(mm)	Φ9.52	
	Maximum distance	Height	(m)	5	
		Length	(m)	10	
The above data is subject to change without notice. Please refer to the nameplate of the unit.					

3 Part name

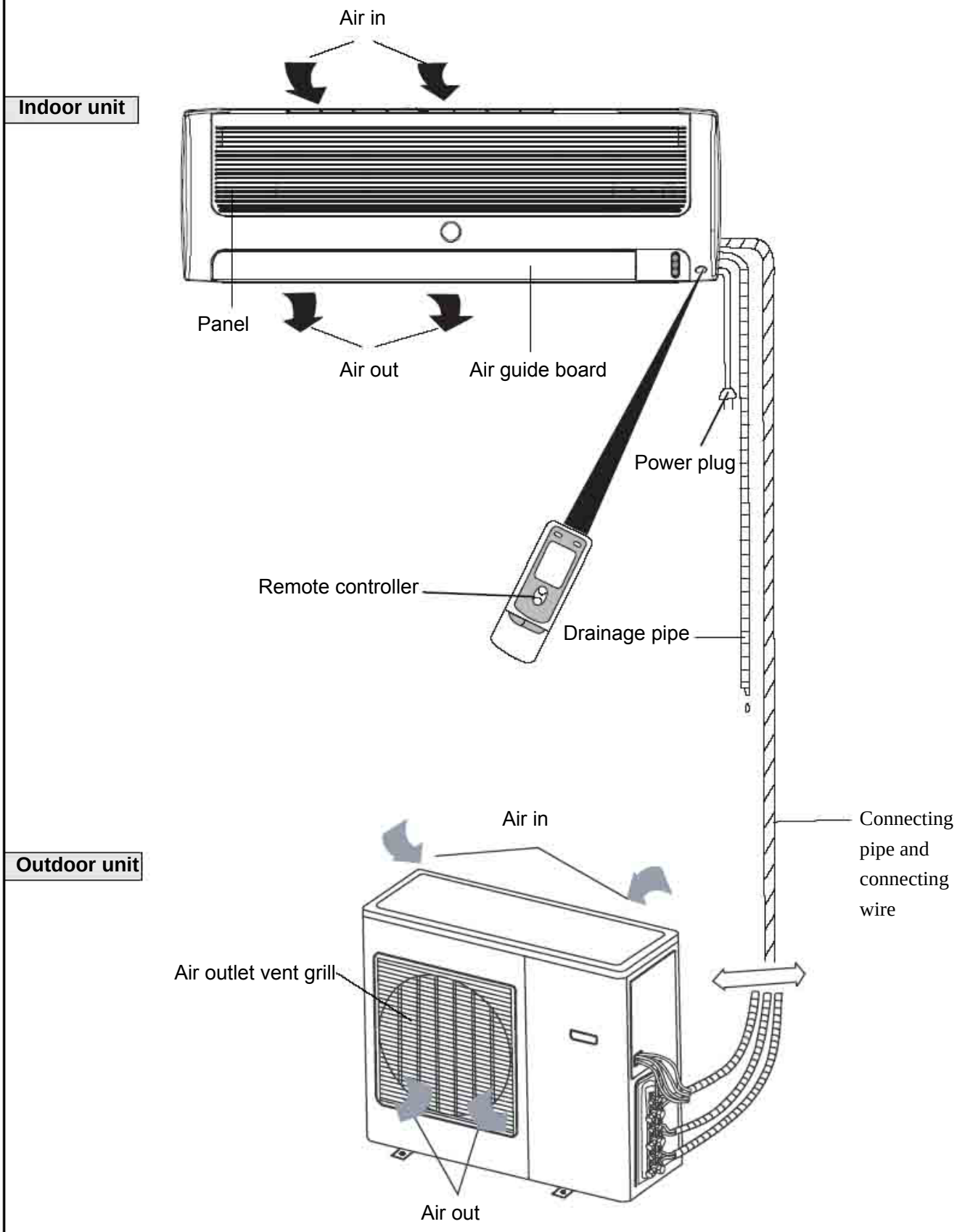
3.1 Part name of one driving one unit



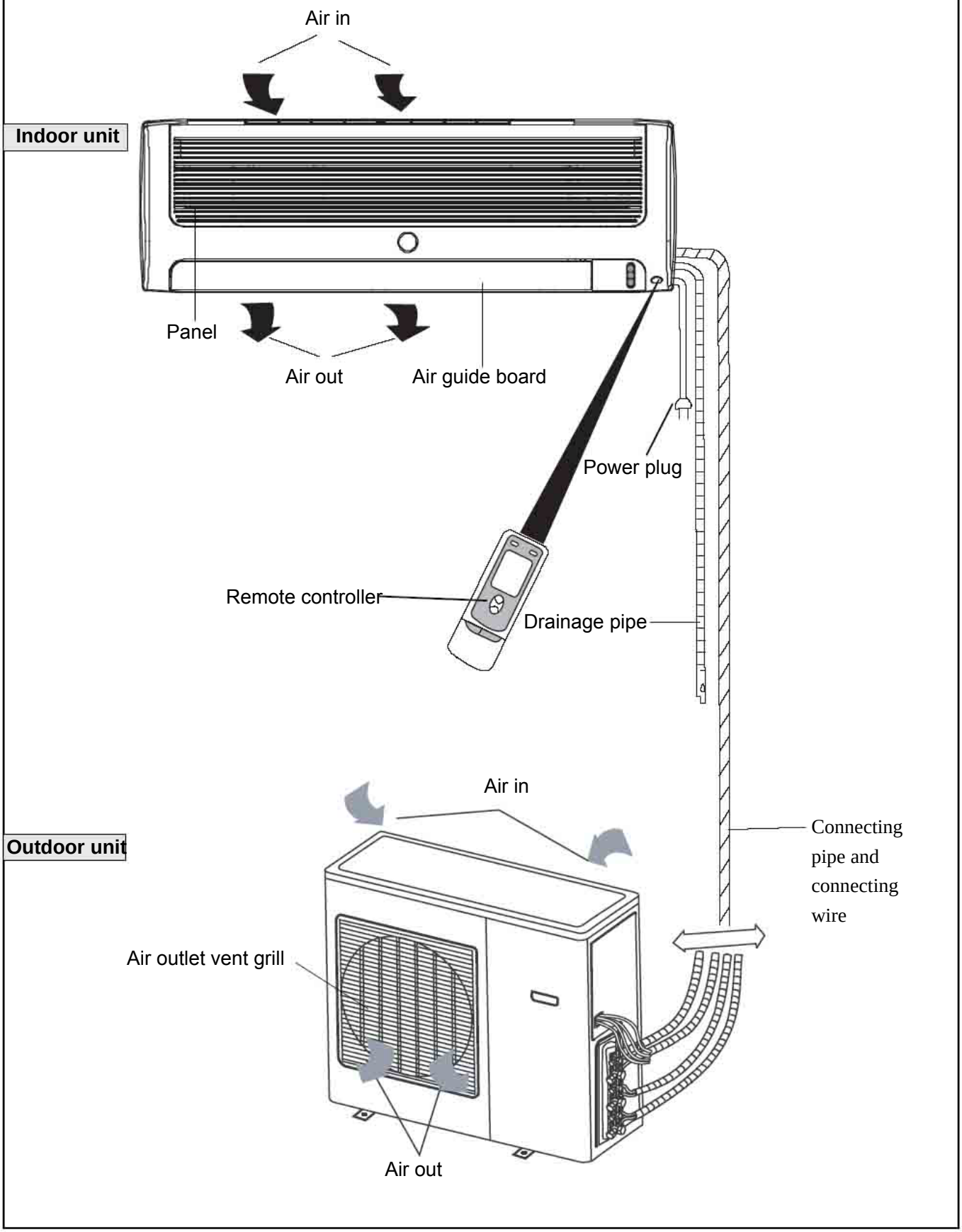
3.2 Part name of one driving two unit



3.3 Part name of one driving three unit

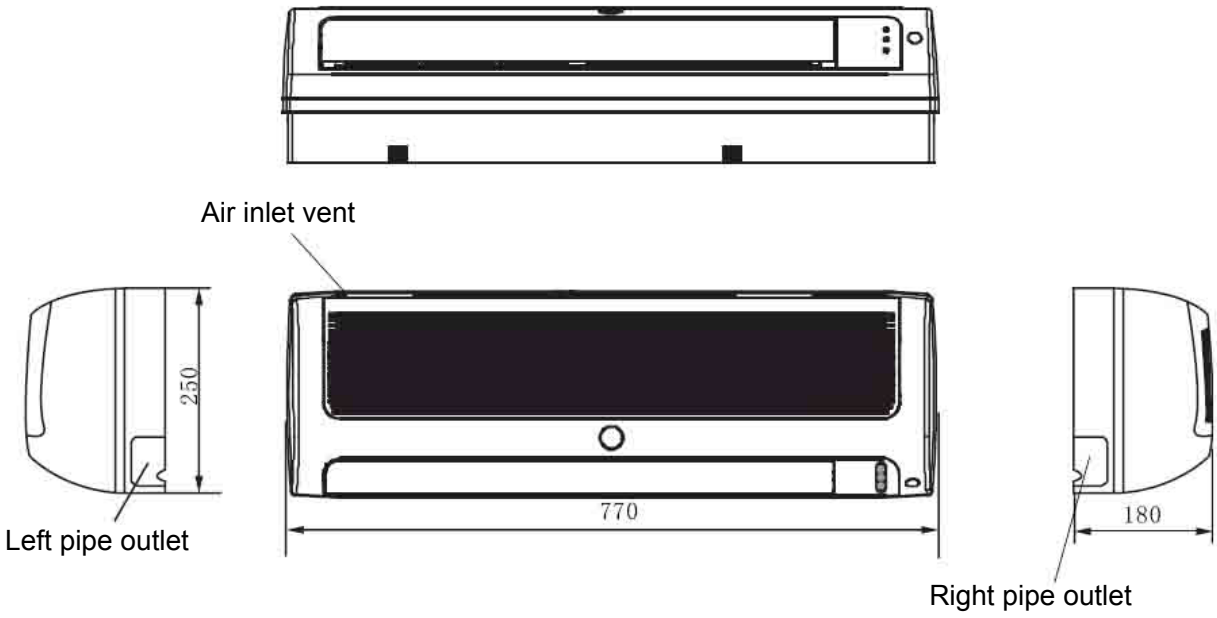


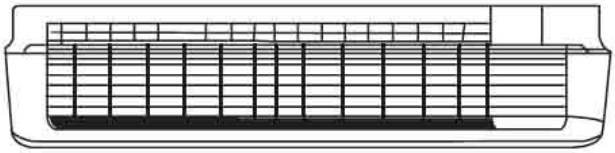
3.4 Part name of one driving four unit



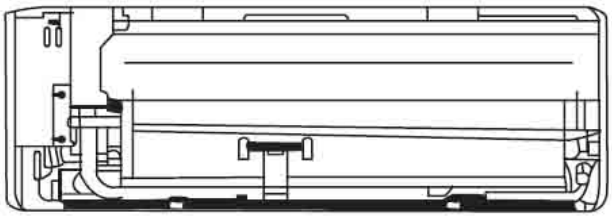
4 Outline and installation dimensions

4.1 Outline and installation dimensions of indoor unit

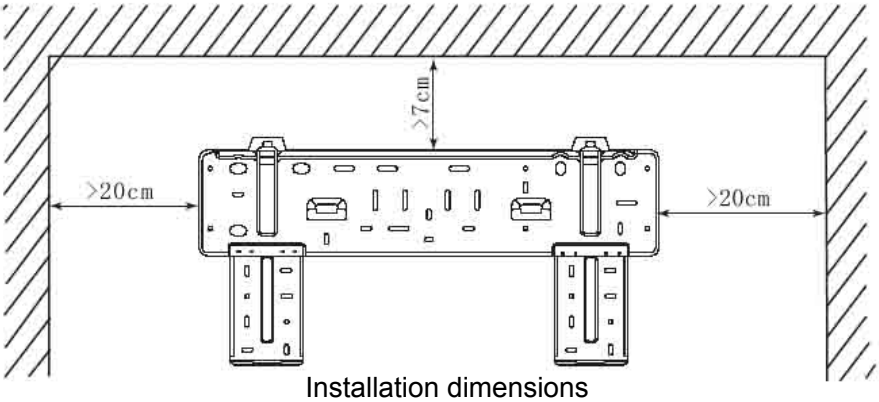




Rear view

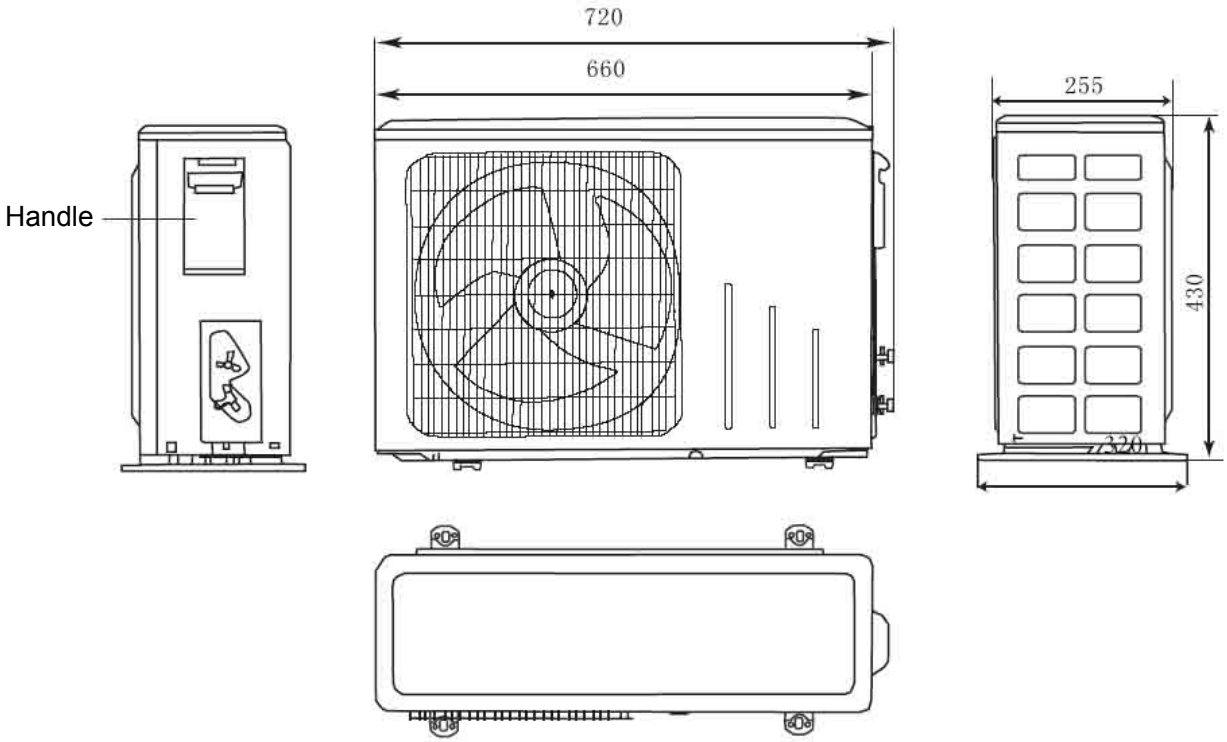


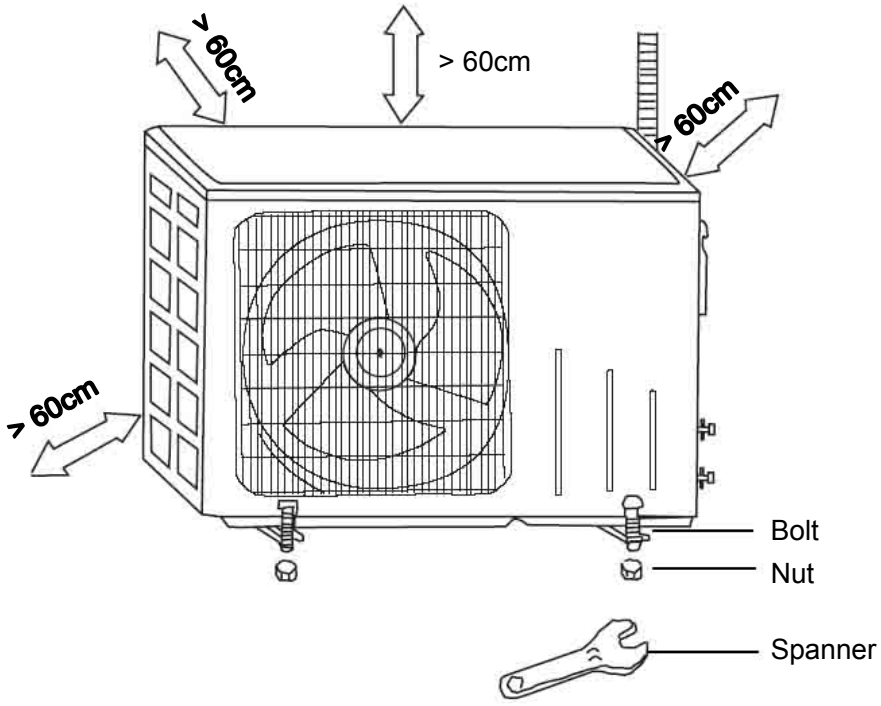
Ceiling



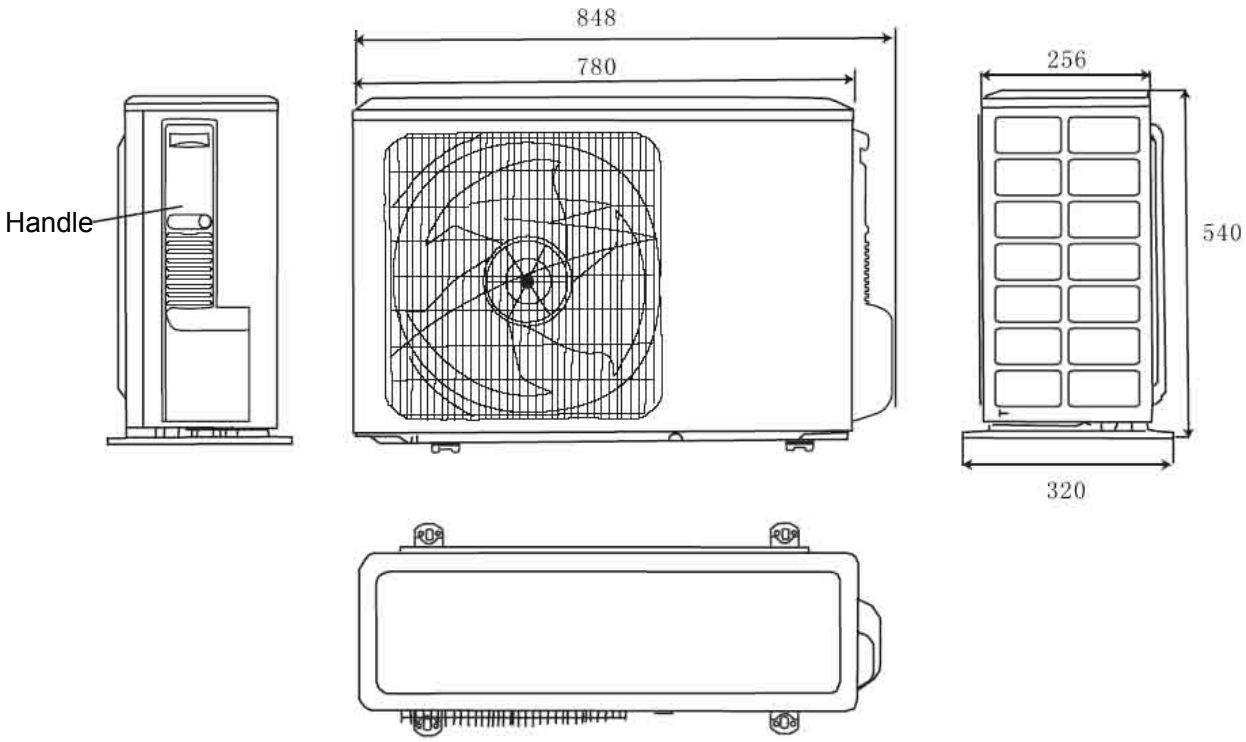
Installation dimensions

4.2 Outline and installation dimensions of indoor unit 20

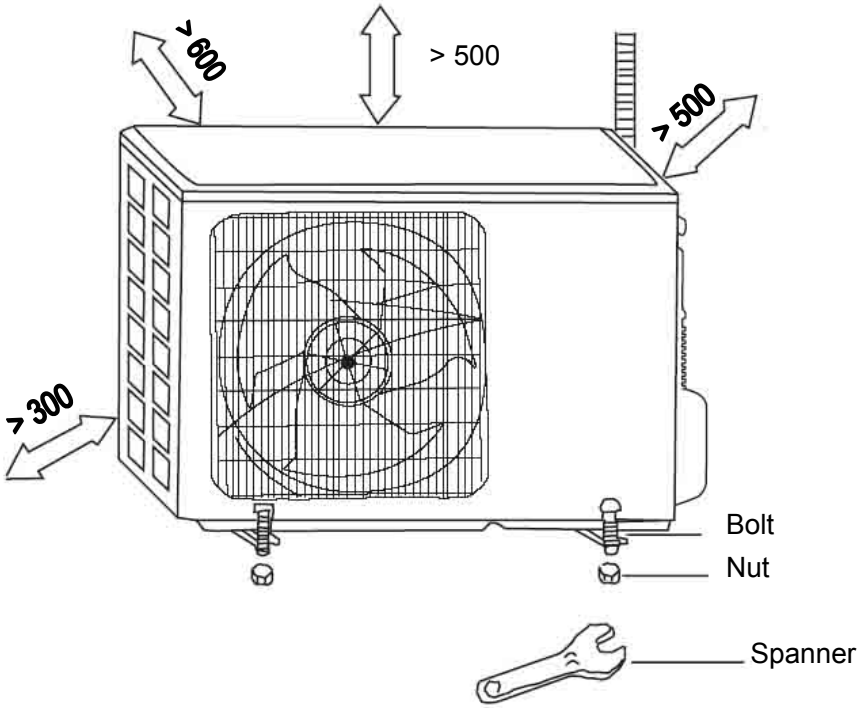




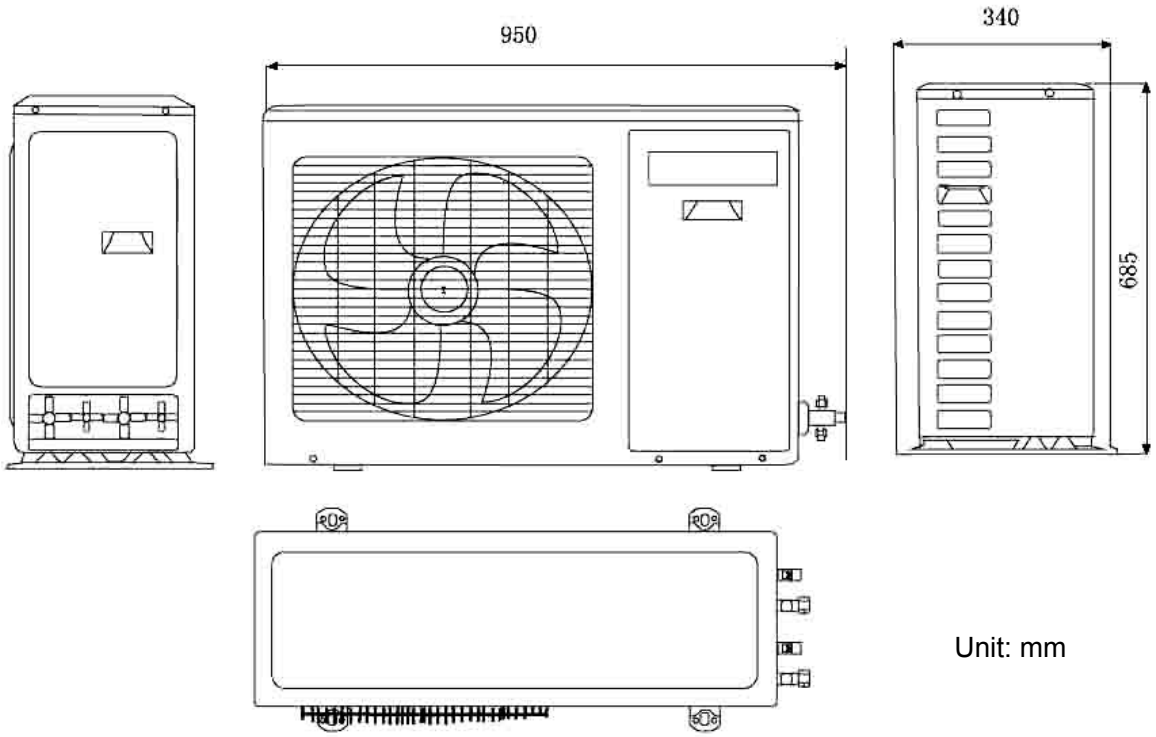
4.3 Outline and installation dimensions of indoor units 25, 32



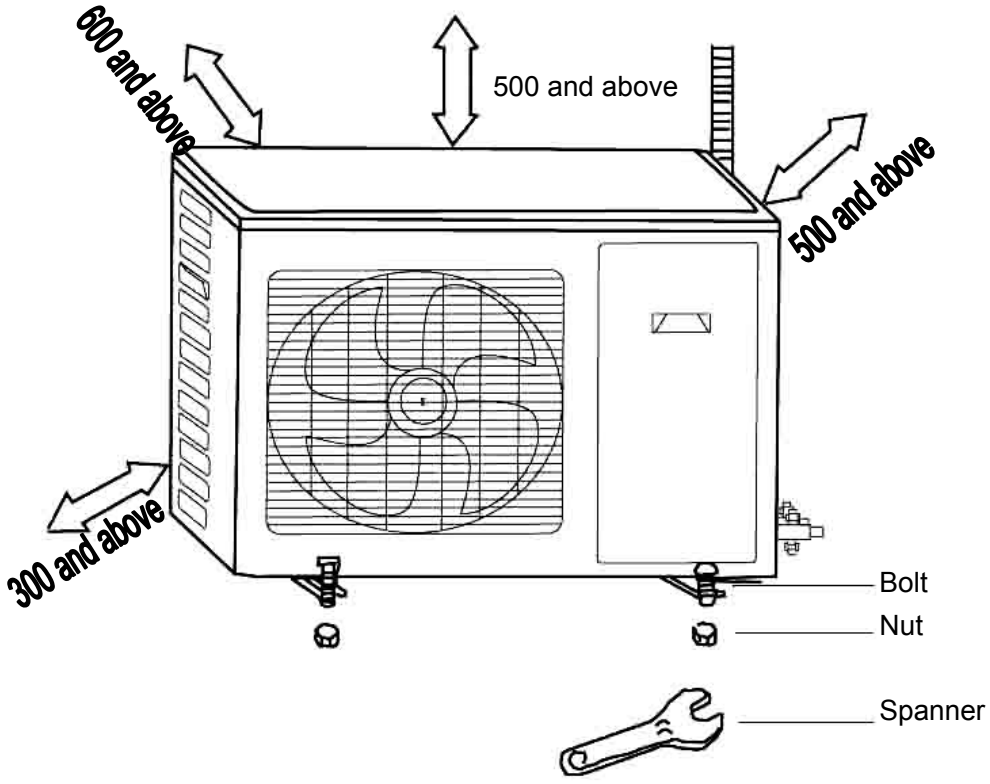
Unit: mm



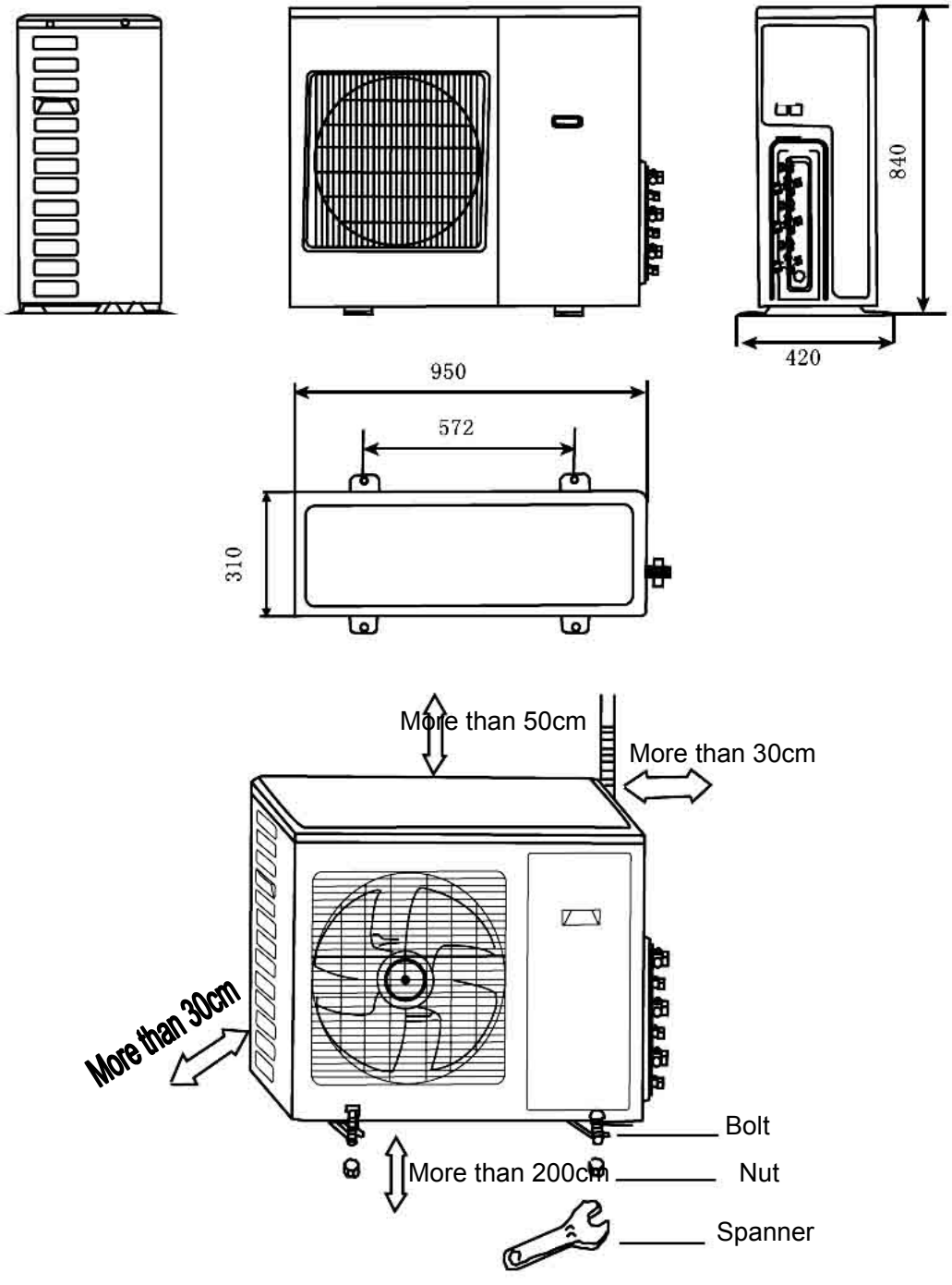
4.4 Outline and installation dimensions of one driving two outdoor unit



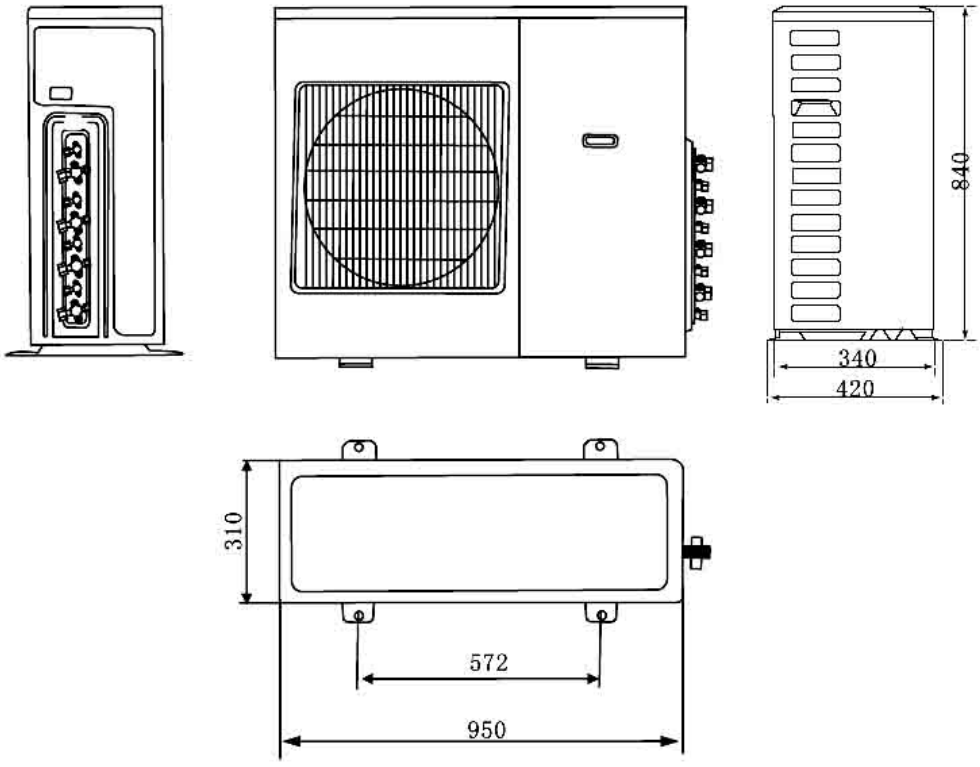
Unit: mm

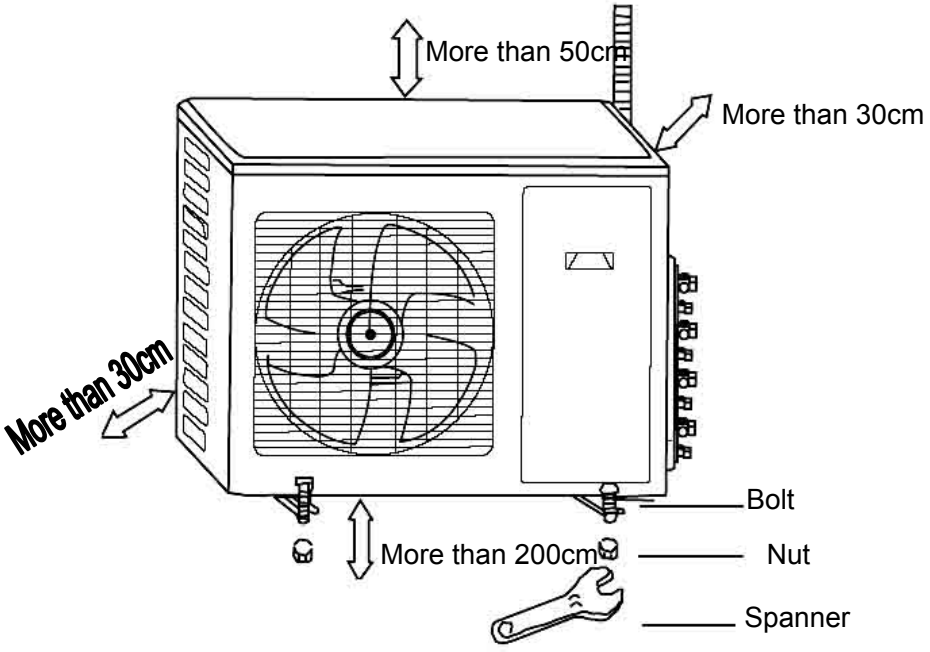


4.5 Outline and installation dimensions of one driving three outdoor unit



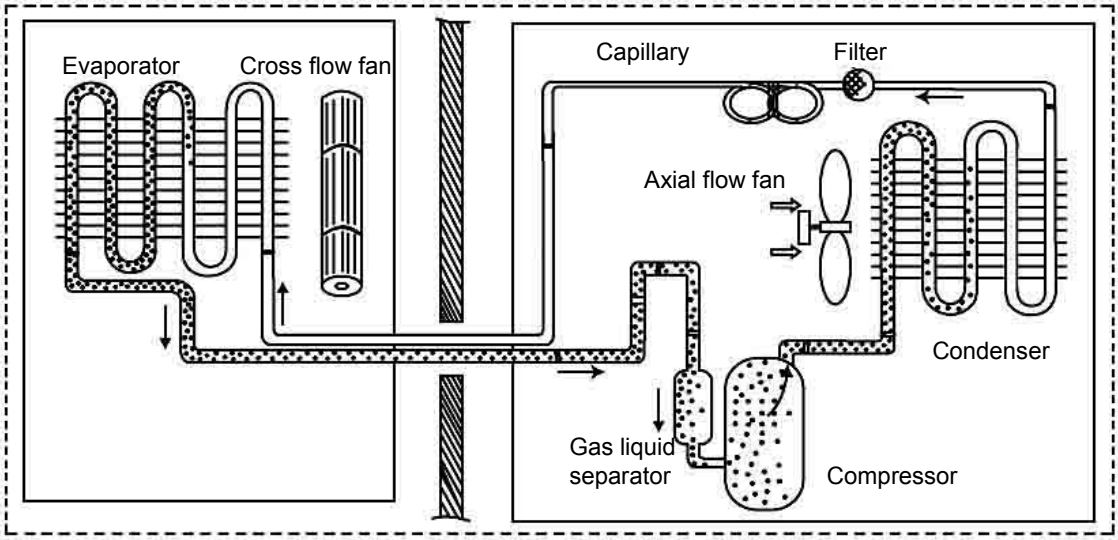
4.6 Outline and installation dimensions of one driving four outdoor unit





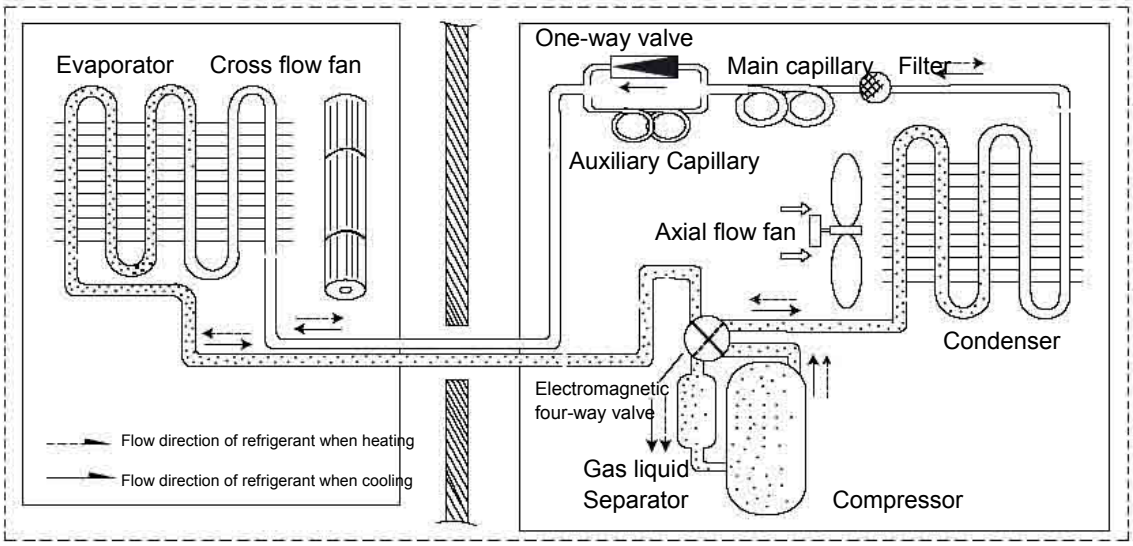
5 System diagram

5.1 Cool only system circuit diagram



When the power is on, indoor and outdoor units will start to run. The compressor sucks low-pressure refrigerant gas from the evaporator of indoor unit and then discharges high-temperature, high-pressure refrigerant gas into outdoor condenser. Then air exchanges the heat with outdoor air and becomes refrigerant liquid. The liquid is throttled by the capillary and changes into low-temperature and low-pressure liquid and then flows into indoor evaporator. Then liquid exchanges the heat with the required air and changes into low-temperature and low-pressure refrigerant gas. The cycle introduced above goes on and on, and the demanded low temperature environment is maintained

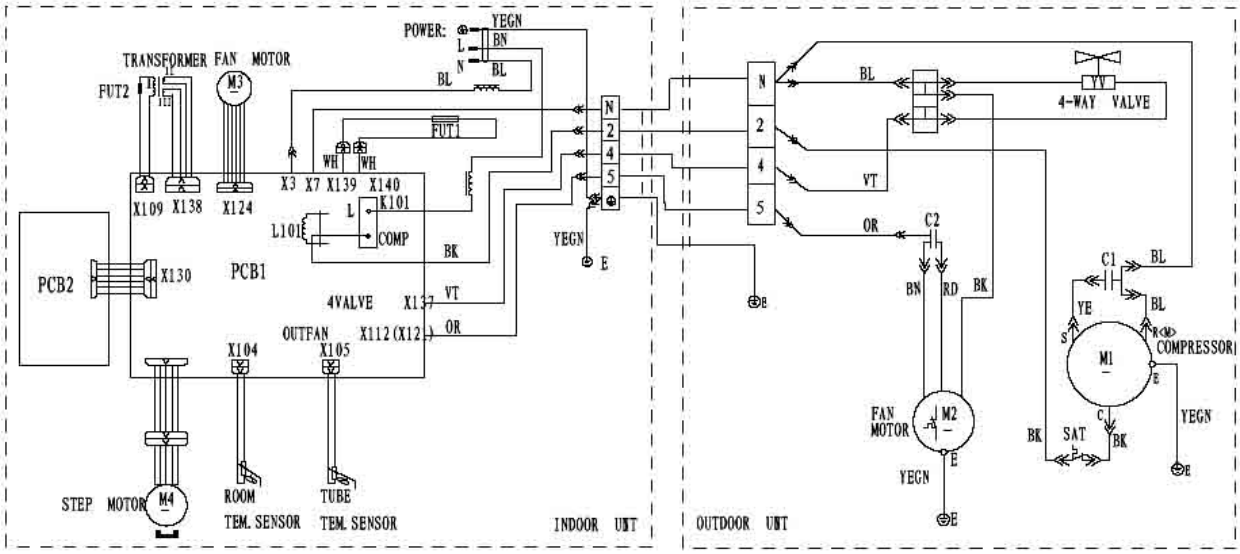
5.2 Cool/Heat system circuit diagram



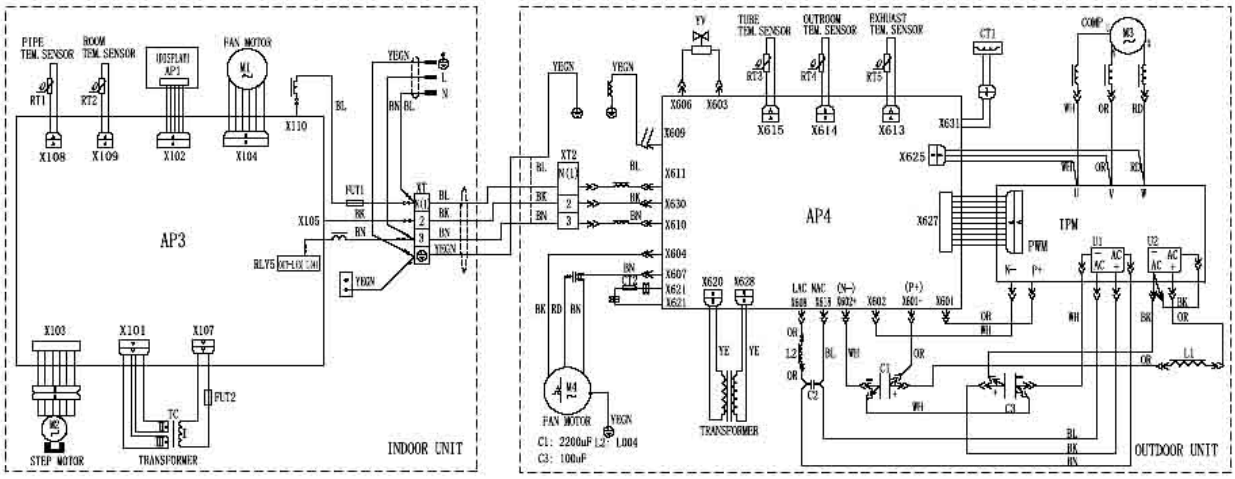
When the power is on, indoor and outdoor units will start to run. When the system operates in cool mode, the compressor sucks low-temperature, low-pressure refrigerant gas from indoor evaporator and then discharges high-temperature, high-pressure refrigerant gas into outdoor heat exchanger. With the help of axial flow fan, the gas transfers its latent heat into outdoor air and becomes high-pressure refrigerant liquid. The liquid is throttled by the capillary and changes into low-temperature and low-pressure liquid and then flows into indoor heat exchanger. With the help of centrifugal fan, the liquid evaporates into low-temperature refrigerant gas and indoor air is cooled down. The refrigerant gas is sucked into the compressor and the cycle introduced above goes on and on, and the demanded low temperature environment is maintained. When the system operates in heat mode, four-way valve changes its way and the refrigerant flows into the reversible cycle as the cool mode. The refrigerant discharges its latent heat in the indoor heat exchanger, and sucks heat from outdoor heat exchanger and forms the heat pump cycle. This cycle goes on and on, and the demanded high temperature environment is maintained.

6 Circuit diagram

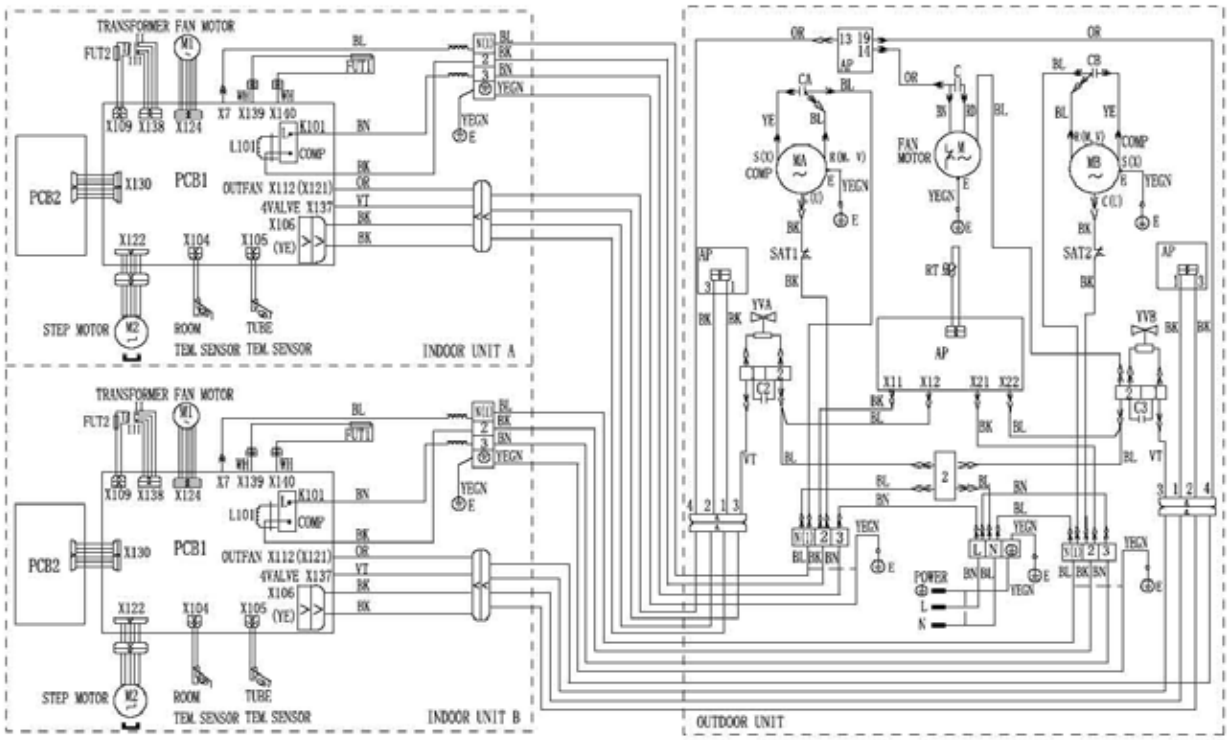
PRO AIR 107 IN / PRO AIR 107 OUT; PRO AIR 109 IN / PRO AIR 109 OUT; PRO AIR 112 IN / PRO



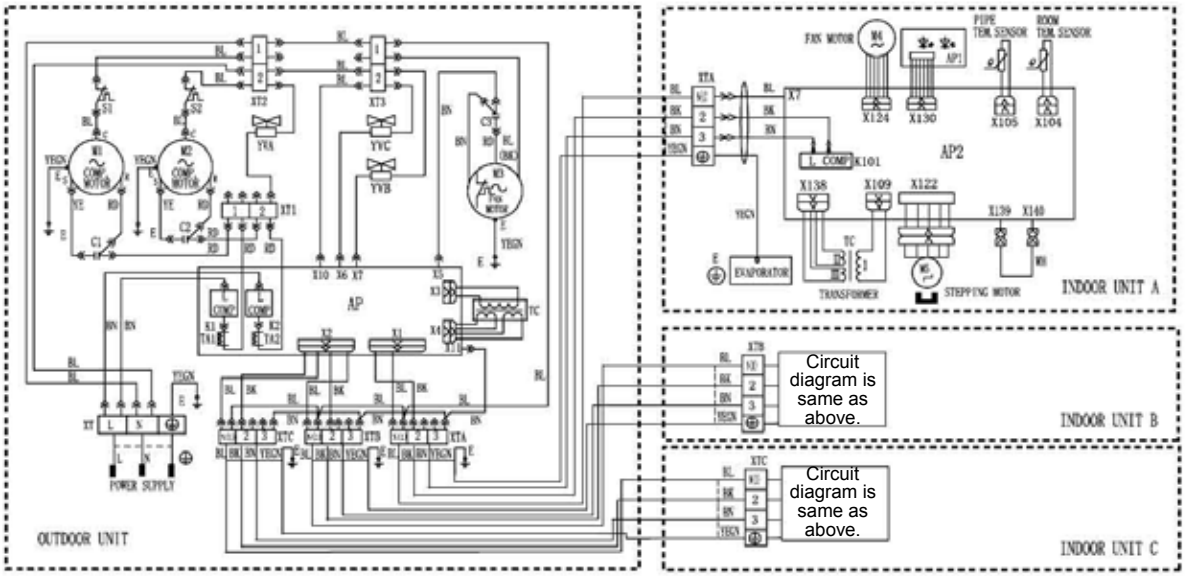
PRO AIR I109 IN / PRO AIR I109 OUT; PRO AIR I112 IN / PRO AIR I112 OUT



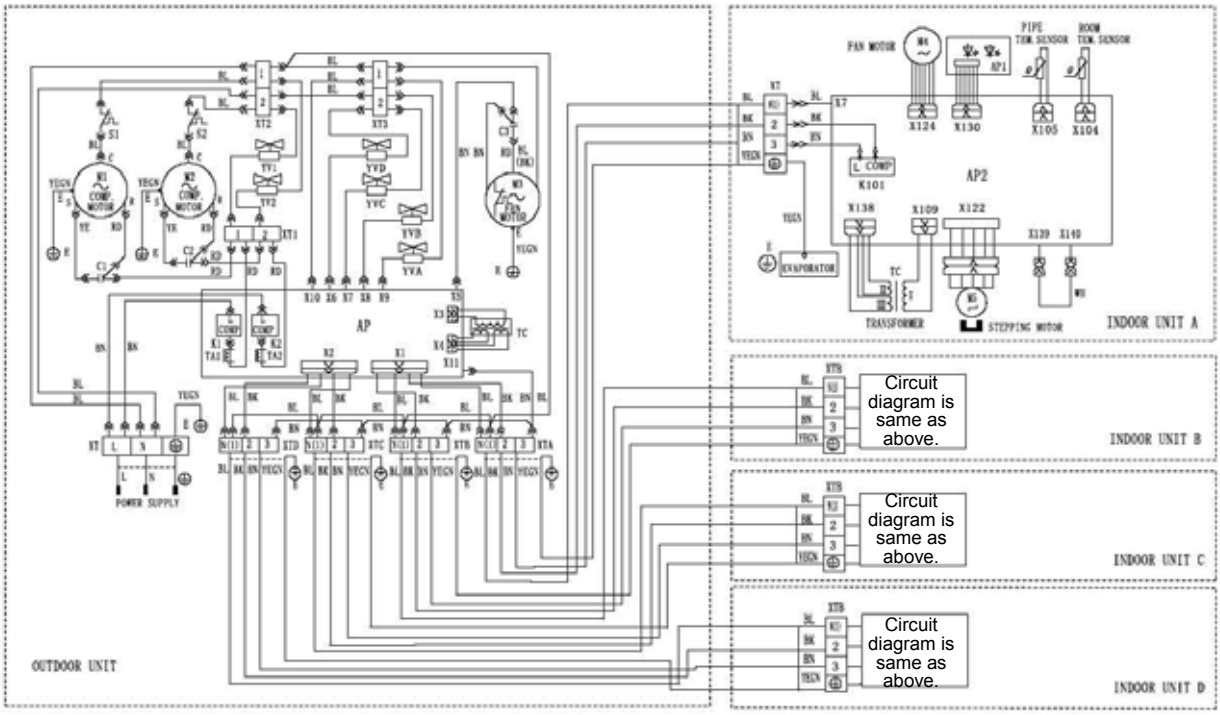
PRO AIR 218 IN / PRO AIR 218 OUT



GE AIR 326 IN1 / GE AIR 326 IN2 / GE AIR 326 OUT



GE AIR 428 IN / GE AIR 428 OUT



These circuit diagrams are subject to change without notice. Please refer to the one supplied with the unit.

PRO AIR I112 IN / PRO AIR I112 OUT, suitable for frequency converter

7.1 Function manual of remote controller

7.1.1 Temperature parameter

- Room set temperature: (T_{set})
- Room ambient temperature: (T_{amb})

7.1.2 Basic function of system

No matter what mode the compressor is in, the minimum time interval between two startups should be 3 minutes after it is powered on.

7.1.2.1 Cooling mode

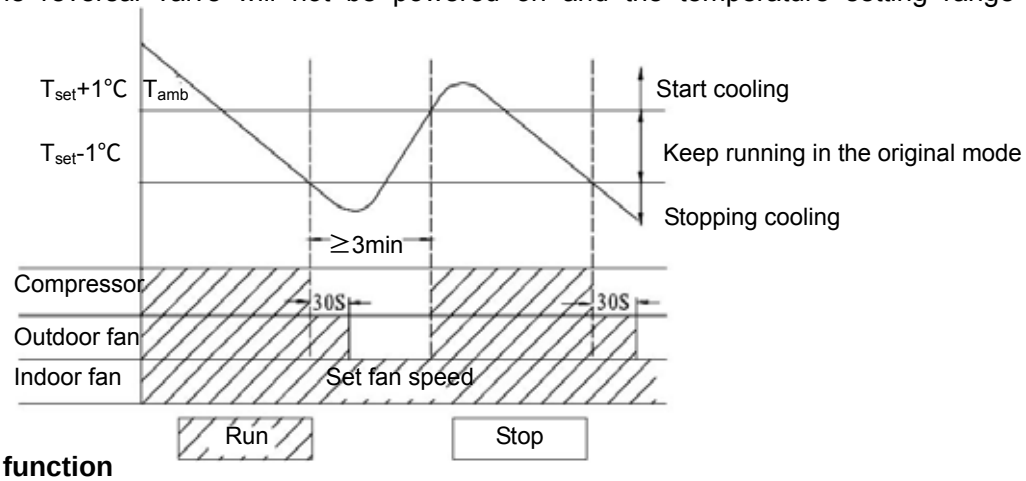
7.1.2. 1.1 The condition and process of cooling

If $T_{amb}>T_{set}$, COOL mode will act, compressor and external fan will run, the indoor fan will run at the set speed.

If $T_{amb}\leq T_{set}$ -2℃, compressor will stop and external fan will stop after a delay of 30s. The indoor fan will run at the setting speed.

If Tset-2℃＜T_{amb}＜T_{set} ℃, the unit will keep on running in the original mode.

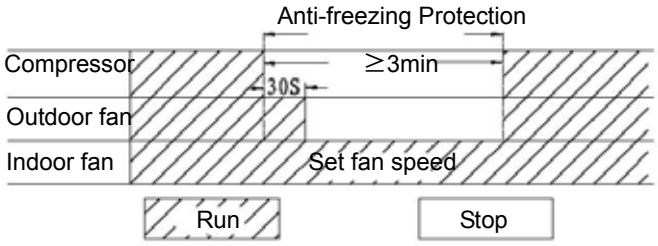
- In this mode, the reversal valve will not be powered on and the temperature setting range is 16℃~30℃.



7.1.2.1.2 Protection function

- **Anti-freezing Protection**

When the anti-freezing protection is detected, the compressor will stop, the outdoor fan will stop after a delay of 30 seconds. The indoor fan and swing motor will keep on running in the original mode. When anti-freezing protection is eliminated and compressor has stopped for 3min, the machine restores its former operation mode.



- **Over current protection**

The compressor will run at a limited frequency when the total current is high. The compressor will stop when the total current is too high and the outdoor unit will stop after a delay of 30s.

7.1.2.2 Dry mode

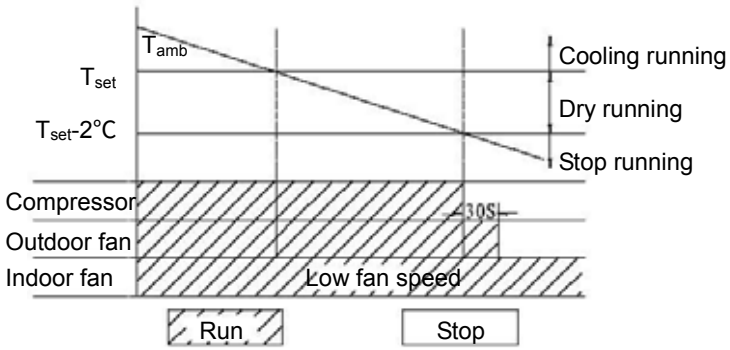
7.1.2.2.1 The condition and process of dry mode

If $T_{amb}>T_{set}$, the drying mode will act. The compressor and external fan will run, and the indoor fan will run at a low speed.

If T_{set}-2℃≤T_{amb}≤T_{set}, the unit will keep on running in the original mode.

If T_{amb}≤T_{set}-2℃, the compressor will stop. The external fan will stop after a delay of 30s, and the indoor fan will run at a low speed.

- In this mode, the reversal valve will not be powered on and the temperature setting range is 16℃~30℃



7.1.2.2.2 Protection function

- **Anti-freezing protection**
  Anti-frost protection same as cooling
- **Over current protection**
  Over current protection is the same as the cooling mode.

7.1.2.2.3 SWING mode

At this mode, the inner fan will select among high, medium, low and auto modes and the compressor, outer fan and 4-way fan will stop running.

- In this mode, the reversal valve will not be powered on and the temperature setting range is 16℃~30℃

7.1.2.3 HEAT mode

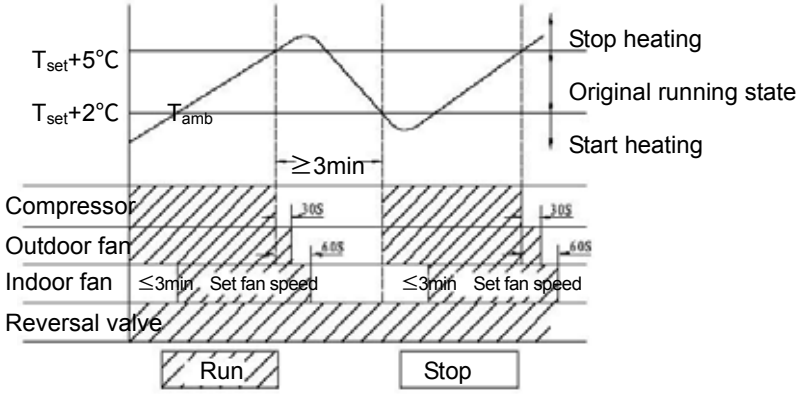
7.1.2.3.1 Running condition and process of heating mode

If T_{amb}≤T_{set}+2℃, HEAT mode will act, the compressor, outdoor fan and reversal valve will run at the same time, the indoor fan will run after 3 minutes' delay at the latest.

If T_{amb}≥T_{set}+4℃, the compressor will stop first and 15s later, the outdoor unit will stop. The reversal valve will keep power-on and the indoor fan will run at a low speed and will stop 30s later.

If T_{set}+2℃＜T_{amb}＜T_{set}+4℃, the unit will keep running in the previous mode.

- In this mode, the temperature setting range is 16℃~30℃.
- The air conditioner will adjust the running frequency of the compressor automatically according to the change of ambient temperature.
- The 4-way valve will be cut off 2min after the compressor stops operation when heating cut-off, or heating mode changed to other mode.



7.1.2.3.2 The condition and process of defrosting

When frost is detected in the condenser, the system will enter into defrosting mode. When the defrosting starts, the compressor and indoor fan stop running. The outdoor fan will stop after a delay of 30s, and the four-way

valve will stop running after a delay of 30s. The defrosting will start 15s later. After the compressor runs for 7 min or when the defrosting is finished, the compressor will stop, and 30s later the four-way valve will run. 30s later, the compressor and outdoor fan resume to operation and indoor fan will run after a delay of 3min. Prior to entering into defrost, if the auxiliary heating is running, then, for defrosting, the auxiliary heating will be stopped firstly, and 5s later the indoor fan will stop. The indoor fan will run at blowing residual heat mode when the compressor stops due to failure at heating mode.

- In this mode, the reversal valve will not be powered on and the temperature setting range is 16℃~30℃

7.1.2.3.3 Protection function

◆ **Anti-high temperature protection**

If the evaporator is detected with a high pipe temperature, the outer fan stops running and if the evaporator recovers to a normal pipe temperature, the outer fan resumes running.

◆ **Noise immunization protection**

When "RUN/STOP" is used to turn off the unit, the reversal valve will delay 2 minutes to stop.

◆ **Over current protection**

Over current protection is the same as the cooling mode

◆ **Auxiliary electrical heating power**

Operation condition of auxiliary electric heating: for heating mode and when compressor is powered on, and when the pipe temperature is detected to be too low with the indoor fan running at medium or high speed, the auxiliary electric heating will be put into operation. When the compressor is powered on, and when the pipe temperature is detected to be too low with the indoor fan running at low speed, the auxiliary electric heating will be put into operation.

Stop condition of auxiliary electric heating: when the compressor stops or the pipe temperature is too high or the environmental temperature is too high, the auxiliary electric heating stops operation. The auxiliary electric heating will stop when there is failure in the communications. Once it stops, it will require 2min to recover the operation.

7.1.2.4 Dry mode

For air delivery mode, the indoor fan will run at the setting wind speed and the swing motor will run at the setting mode and the running indicator will be lit.

7.1.2.5 Auto mode

In this mode, the system will automatically select its running mode based on the change of the ambient temperature (cooling, dry , heating and air supply). The protection function is same as HEAT/COOL mode.

7.1.2.6 Failure indication of general protection functions at various modes

1 Overload protection

When evaporator pipe temperature is detected high, if it is still higher after the compressor runs in a limited frequency, the compressor will stop running. In auto HEAT or HEAT mode, the indoor fan will blow for 60 seconds and then stop, In other modes, the indoor fan will run at the setting speed and display H4.

- Evaporator pipe temperature is the temperature of outdoor heat exchanger when cooling or temperature of indoor heat exchanger when heating.

2 Compressor delay protection

The compressor will delay 3min to start again after stopping.

3 Compressor discharge temperature protection

When discharge temperature is too high, the compressor will stop and it will resume running after 3 minutes and display E4.

4 Communications malfunction

Communications malfunction means that no correct signal can be received continuously within 3 minutes. In this case, the outdoor unit stops operation. The residual heat blowing will be stopped at auto heating or heating mode. As to other modes, the indoor fan will run at the setting wind speed.

5 Module protection

The compressor will stop at module protection and the compressor will resume back to operation when it has stopped for 3min.

6 Status of indicator at receiver board of indoor unit

The receiver board indicator at running is at normal status and when the indicator signal received three times continuously within 6 seconds are not the same as the previous one will be recognized as pressing one time the indicator button. In this case, the indicator of receiver board will enter into detection mode and will automatically exit from the detection mode in 3 minutes.

7.1.3 Other controls

7.1.3.1 Power ON/OFF

Each time the On/Off button of the remote controller is pressed, the On/Off mode will be changed over once.

7.1.3.2 Mode selection

Press the MODE button on the remote controller to select and display the following modes: AUTO, COOL, DRY, FAN, and HEAT.

7.1.3.3 Temperature setting selection button

Each time TEMP□ or TEMP□ button is pressed, the setting temperature will be increased or decreased by 1℃, with the adjusting range being 16～30℃. In AUTO mode, this button does not function.

7.1.3.4 Time setting button

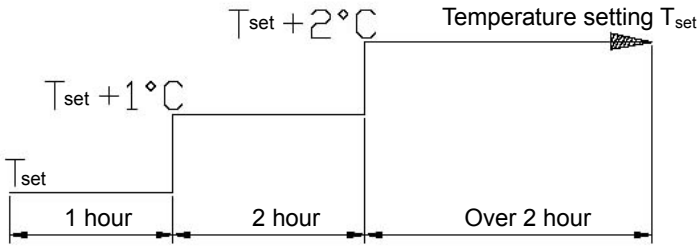
Time setting button of remote controller: the time selection range is 0-24h, with the minimum unit being 0.5h.

7.1.3.5 Auto button

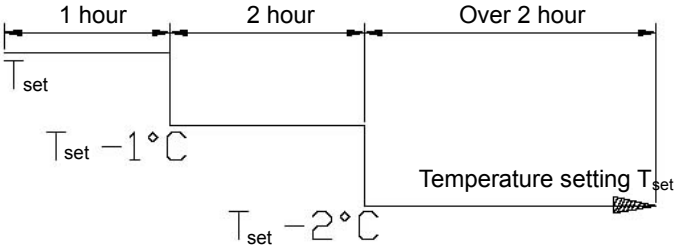
The system will be stopped if the button is pressed down when the remote controller is powered on, with the system being operated by remote controller. If the remote controller is powered off, pressing the button will enter auto run mode and the swing will be turned on. The system will be running in accordance with the remote controller if there is remote control command.

7.1.3.6 Sleep function

If the sleep function is set up at cooling or drying mode, T_{set} will be raised automatically for 1°C after one hour, and will be raised for another 1°C 2 hours later. Then, it will be running at such a setting temperature and such a setting wind speed.



If the sleep function is set up at heating mode, T_{set} will be decreased for 1°C after one hour, and will be decreased for 2°C 2 hours later. Then, it will be running at such a setting temperature and such a setting wind speed.

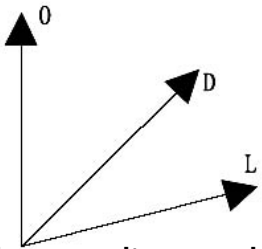


In FAN and AUTO mode, the set temperature is fixed.

7.1.3.7 Swing motor control

Use the SWING button of the wireless remote controller to controller SWING On/Off. Swing will only act when indoor fan is running.

After power on, the stepping motor turns back to 0 position and closes the air outlet vent; after the unit is turned on, it will turn back to the max. air outlet I position; when in swinging state, it will swing between L and D position. When the unit is turned off, it will turn back to 0 position.



7.1.3.8 Measurement of maximum cooling capacity, name heating/cooling

Select cooling mode power on with remote controller and press “Light” button to turn on the light. In this case, a sound from buzzer should be heard. Press “Change air” button to set up for air change 1 (air change 2), a sound from buzzer should be heard, entering the maximum cooling mode (name cooling). Afterwards, it is not allowed to press any other button of remote controller. Otherwise, the system will exit from the maximum cooling mode (name cooling). Select heating mode power on with remote controller and press “Light” button to turn on the light. In this case, a sound from buzzer should be heard. Press “Change air” button to set up for air change 1 (air change 2), a sound from buzzer should be heard, entering the maximum heating mode (name heating). Afterwards, it is not allowed to press any other button of remote controller. Otherwise, the system will exit from the maximum heating mode (name heating).

In case the maximum cooling, name cooling and name heating have been properly set up, cancel the maximum cooling, name cooling and name heating 2 hours later.

7.1.3.9 Power supply of outdoor unit

The power supply for outdoor unit is turned on in AUTO, COOL, HEAT and DRY mode under turn-on state. The power supply for outdoor unit will delay 3 minutes to turn off under turn-off state or in the FAN mode under turn-on state.

7.1.3.10 Buzzer

The buzzer will deliver a sound when the remote controller is powered on or an effective remote control signal is received or when there is button input signal.

7.1.3.11Control of electric heater belt

The two electric heater belts will stop operation when there is failure in environmental temperature sensor of outdoor unit, otherwise, the control will be carried out in accordance with the following logic:

① If the outdoor environmental temperature is very low and the compressor is not turned on, the electric heater belt of compressor will operate: otherwise, if the compressor is turned on or the compressor is not turned on but the outdoor environmental temperature is very high, the electric heater belt will not operate. If the compressor it not turned on and is in between lower and higher, the electric heater belt of compressor will keep on the original state.

② If the outdoor environmental temperature is low but higher than mentioned in the above paragraph, the electric heater belt of compressor will operate: otherwise, if the electric heater belt of compressor does not operate when the outdoor environmental temperature is very high. If it is between the two temperatures, the electric heater belt of compressor will keep on the original state.

7.1.3.12 Indoor fan control

The indoor fan may be set up with remote controller to HIGH, MED and LOW, in this case, the fan will run respectively at high, medium and low speed.

The auto wind speed of indoor fan:

① For cool/heat mode: if the frequency is low, the indoor fan runs at low wind speed;if the frequency is high, the indoor fan runs at high wind speed.

② For air delivery mode: the auto wind speed is forcedly set up to low wind speed.

7.1.3.13 Power-off memory function

Mode, swing, temperature setting, wind speed setting and timing (in case the power is off when the timer is due and the power is turned on again, the timer will re-start counting. If the power is turned on again, the system will operate at the mode after the timer is due).

Suitable to systems except for PRO AIR I109 IN / PRO AIR I109 OUT PRO AIR I112 IN / PRO AIR I112 OUT frequency converter

7.2 Function manual of remote controller

7.2.1 Temperature parameter

- Room set temperature: (T_{set})
- Room ambient temperature (T_{amb})

7.2.2 Basic function of the system

No matter what mode the compressor is in, the minimum time interval between two startups should be 3 minutes after it is powered on.

7.2.2.1 COOL mode

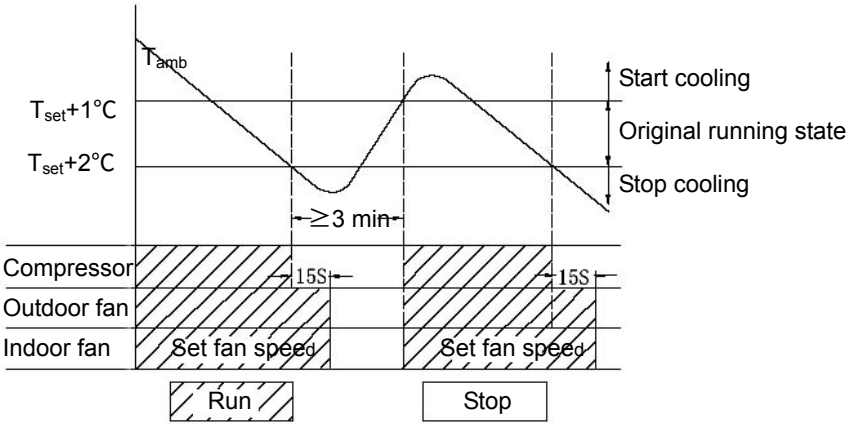
7.2.2.1.1 Running condition and process of cooling

If $T_{amb} \geq T_{set}+1°C$, COOL mode will act, compressor and outdoor fan will run, the indoor fan will run at the set speed;

If $T_{amb} \leq T_{set}-1℃$, the system enters stop mode. In this case, the compressor will stop first, and the indoor/outdoor fans will stop after a delay of 15s.

If $T_{set}-1℃ < T_{amb} < T_{set}+1℃$, the unit will keep running in the previous mode.

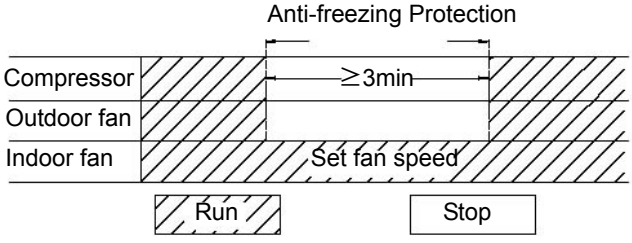
- In this mode, the reversal valve will not be powered on and the temperature setting range is 16℃~30℃



7.2.2.1.2 Protection function

- **Anti-freezing Protection**

When system anti-freezing protection is detected, the compressor and outdoor fan stop running, and the indoor fan runs at the preset speed. When anti-freezing protection is eliminated and compressor has stopped for 3min, the machine restores its former operation mode.



- **Over current protection**

When the system current is detected to be higher than the specified value for 3 consecutive seconds, the system will enter the operation mode of fan only. After 3 minutes, the system resumes back to the original running mode. If the over current protection is detected for three times consecutively in 30 minutes, the system will stop running and it is required to turn on the system with remote controller.

7.2.2.2 Dry mode

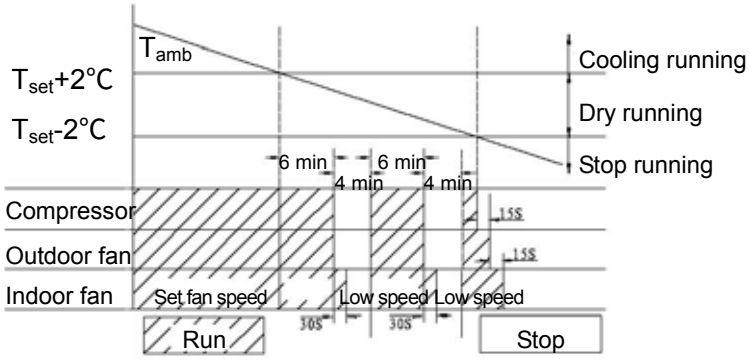
7.1.2.2.1 The condition and process of dry mode

If $T_{amb} > T_{set}+2°C$, the cooling mode will act. The compressor and external fan will run, and the indoor fan will run at an adjustable speed.

If T_{set}-2℃≤T_{anp}≤T_{set}+2℃, the drying mode will act. In this case, the indoor fan will run at low speed. The compressor and the outdoor fan will stop 6min later. The indoor fan will stop 30s later. The compressor and the outdoor fan will run 3.5 min later and the indoor fan will run at low speed. The drying process then will run periodically as given above.

If T_{amb}＜T_{set}-2℃, the system enters stop mode. In this case, the compressor will stop first, and the outdoor fan will stop after a delay of 15s, and then, the indoor fan will stop after another delay of 15s.

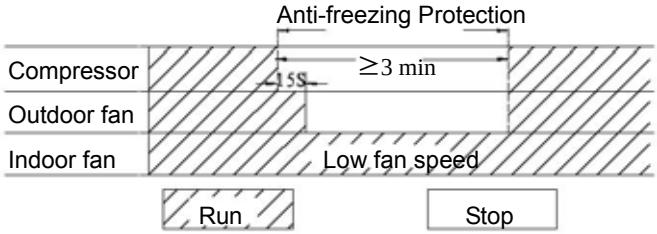
- In this mode, the reversal valve will not be powered on and the temperature setting range is 16℃~30℃



7.2.2.2.2 Protection function

◆ **Anti-freezing Protection**

If system anti-freezing protection is detected, the compressor will stop, but the outdoor fan will stop after a delay of 15s. The indoor fan will run at low speed. If the anti-freezing protection is released and the compressor has stopped for 3 min, the system will resume to original operation mode.



7.2.2.3 heating mode

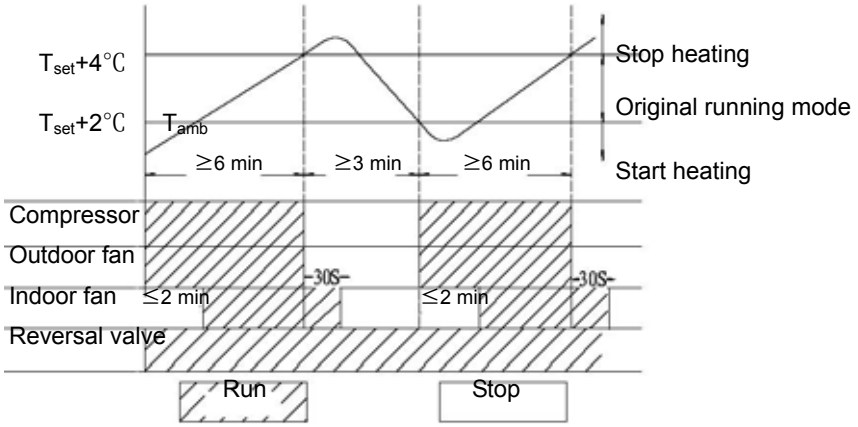
7.2.2.3.1 The condition and process of heating

If T_{amb}≤T_{set}+2℃, HEAT mode will act. In this case, the compressor, outdoor fan and reversal valve will run at the same time, the indoor fan will run in accordance with anti-cool condition.

If T_{amb} ≥T_{set} +4℃, the compressor will firstly stop, and the outdoor fan will stop running 15s later. But the reversal valve is still with power on. The indoor fan will stop after running at low fan speed for 30s.

If T_{set}+2℃＜T_{amb}＜T_{set}+4℃,the unit will keep running in the previous mode.

In this mode, the reversal valve will be powered on and the temperature setting range is 16℃~30℃.

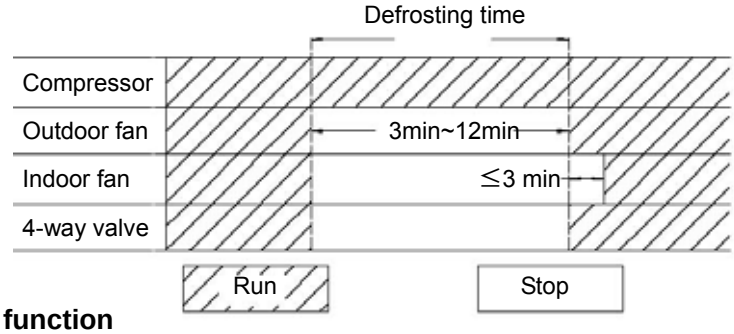


7.2.2.3.2 The condition and process of defrosting

When frost is detected in the condenser, the system will enter into defrosting state. At this time the compressor continues to run and the outdoor fan, four-way valve and indoor fan will stop running. The run indicator blinks. When it's detected that defrosting in the condenser is completed, the outdoor fan and four-way valve will run simultaneously.

The indoor fan will run after a delay of 3min and the compressor keeps on the running mode. In this case, the run indicator stops blinking.

- The defrosting time is 10 min for the first time power on and the defrosting time afterwards depends on the practical frost condition, the more the frost, the longer the defrosting time (Max. 12min, min. 3min). Exit from the defrosting mode if the frost removal is ended.



7.2.2.3.3 Protection function

◆ **Anti-high temperature protection**

If the evaporator is detected with a high pipe temperature, the outer fan stops running and if the evaporator recovers to a normal pipe temperature, the outer fan resumes running.

◆ **Noise immunization protection**

When "RUN/STOP" is used to turn off the unit, the reversal valve will delay 2 minutes to stop.

◆ **Over current protection**

When the system current is detected to be higher than the specified value for 3 consecutive seconds, the compressor and outdoor fan will stop and the indoor fan will stop. 3 minutes later, the system will resume back to the original running mode. The indoor fan will run in accordance with anti-cool air condition: If the over current protection is detected for three times consecutively in 30 minutes, the system will stop running and it is required to turn on the system with remote controller

◆ **Anti-cold air**

To prevent cool air from discharging when heating is started, the indoor fan may lag behind the compressor for operation, with the latest of 2 minutes and will change over automatically the wind speed in accordance with the temperature variation.

7.2.2.4 SWING mode

Running light

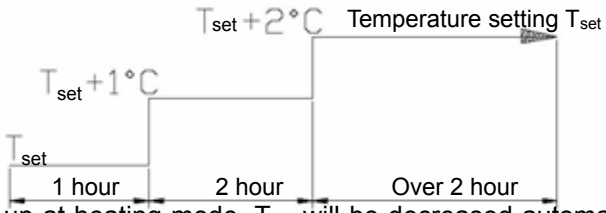
7.2.2.5 Auto mode

In this mode, the system will automatically select its running mode based on the change of the ambient temperature (cooling, dry, heating and air supply). The protection function as HEAT/COOL mode

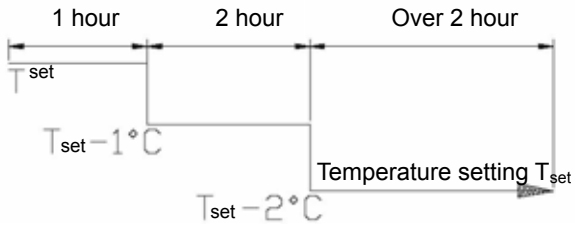
7.2.3 Other controls

7.2.3.1 Sleep function

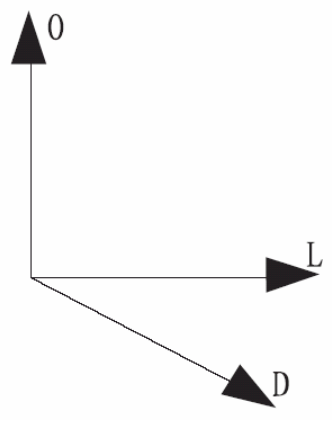
If the sleep function is set up at cooling or drying mode, T_{set} will be raised automatically for 1°C after one hour, and will be raised another 1°C 2 hours later.



If the sleep function is set up at heating mode, T_{set} will be decreased automatically by 1°C after one hour, and will be decreased by 2°C 2 hours later.



7.2.3.2 Swing motor control



7.2.3.3 Timer function

7.2.3.3.1 Timer ON

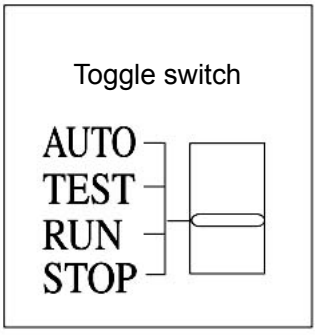
When TIMER ON is set, the system will be set under TIMER ON mode. When it's time to turn on, the controller will run in the set mode. Time interval is 0 hour and the setting range is from 0.5 to 24 hours.

7.2.3.3.2 Timer off

TIMER OFF can be set under running state. When it's time to turn off, the system will be turned off. Time interval is 0.5 hour and the setting range is from 0.5 to 24 hours.

7.2.3.3.3 Toggle switch (opening panel of indoor unit)

a. Run in auto mode, and will run according to the signal from remote controller, if any.
b. For test position, the main system will run at cooling mode. The indoor fan will run at high speed and the swing will run at SWING: if there is a remote control command, the main system will run according to the remote controller. If there is open or short circuit in the temperature sensor, the buzzer will deliver an alarm at a frequency of 2Hz.
c. In case the toggle switch is set to running position, the main unit runs in accordance with the received remote control command
d. The system will stop running at the stop position.



7.2.3.4 Buzzer

The buzzer will deliver an alarm when the controller is powered on or a signal from remote controller is received.

If there is open or short circuit in the temperature sensor, and the encoder switch is turned to TEST postion, the buzzer will deliver an alarm at a frequency of 2HZ.

7.2.3.5 Indicator

Running indicator light (red)
Cooling indicator (green)
Heating indicator (yellow)

7.2.3.7 Auto wind speed control

In this mode, according to ambient temperature, indoor fan will select High, Middle and Low fan speed automatically.

7.2.3.8 Memory function

If the system is turned on again after it is cut off, the system will start to run at the original operation mode prior to power cut off.

7.3 Names and functions of each part of the remote controller

Note:

- Be sure that there are no obstructions

Swing button

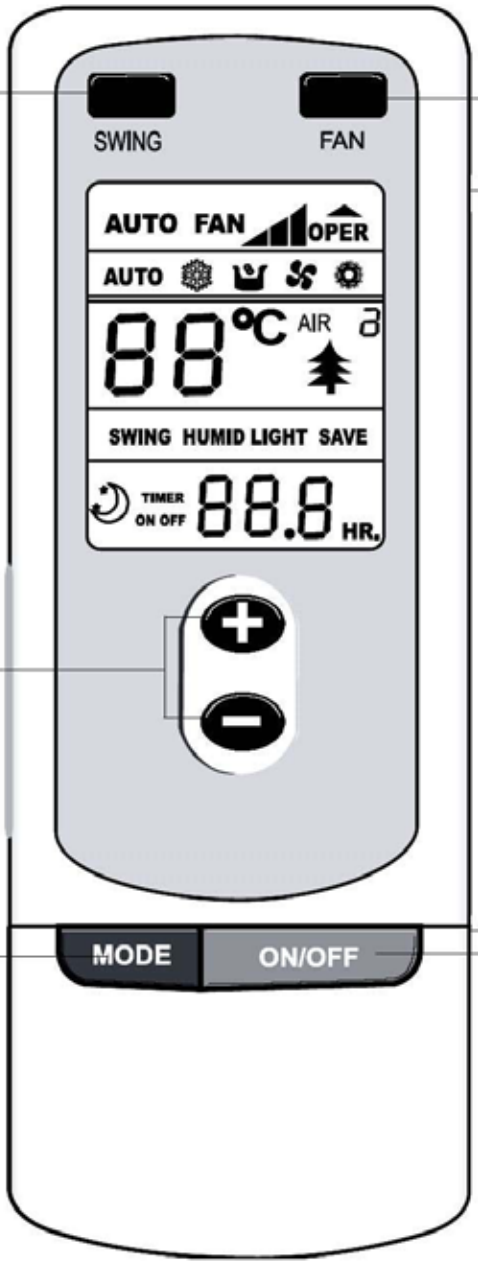
The guide louver will swing at a certain angle each time the swing button is pressed and will stop operation when the button is pressed again.

Swing button

Press the button once, and the air speed changes in the order of

AUTO fan speed

Remarks: At "" mode, the wind speed of fan is not adjustable.



TEMP. button

Press ⊕ once and it rises by 1 degree. Press ⊖ once and it drops by 1 degree.

In mode, room temp. can be adjusted in the range of 16℃-30 ℃

"COOL mode operation

" Dry mode

" Ventilation mode

"HEAT mode operation

MODE button

Press this button in turns to change the operational mode in the below order.

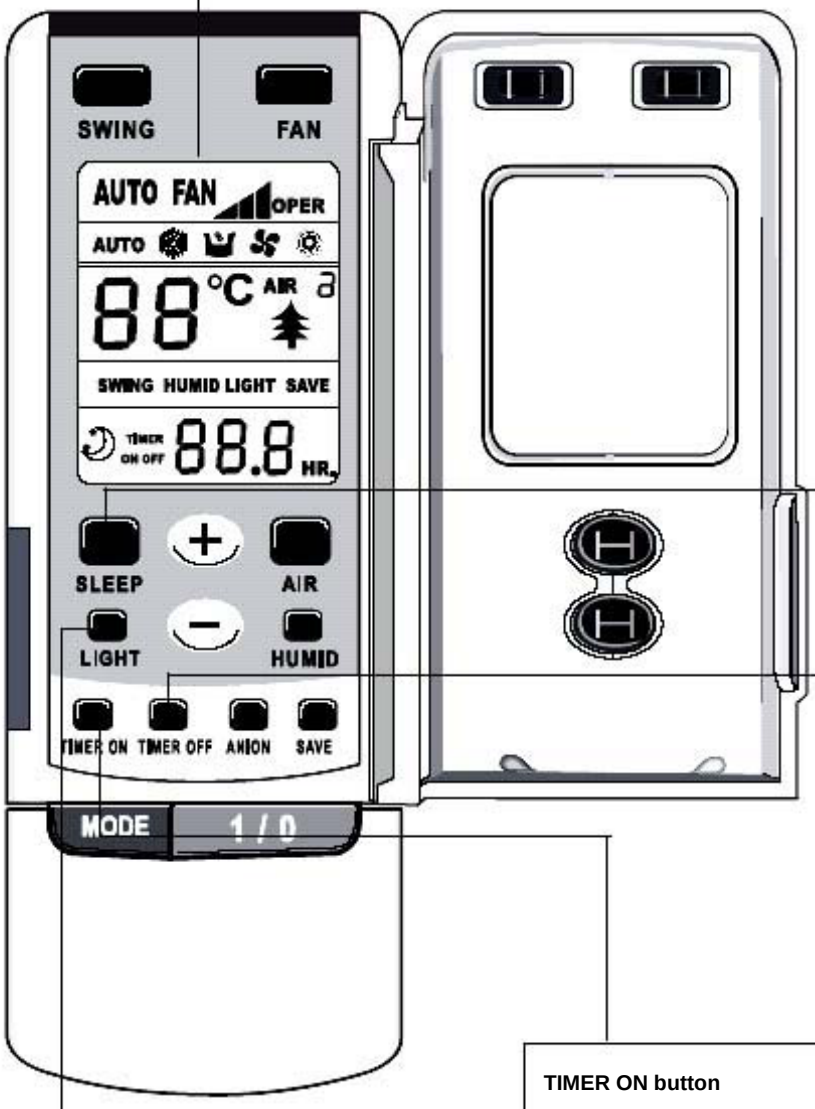
Auto

ON/OFF button:

Press this button, the unit will start to run, when repressed it, it will stop running.

7.4 Names and function of wireless remote controller (After cover is opened)

Note: This type of wireless remote control is a kind of new current control. Some buttons of the control not available to this air conditioner will not be described below.



Liquid crystal display
It shows all the setting contents.

Sleeping mode button
Press the button once to enter sleep mode, and press it another time, to exit from the sleep mode.
Note: No sleep function at "auto" and "air delivery" modes

TIMER OFF button
If the button is pressed during operation, the auto stop time may be set up at the range of 0-24 hours.

0 → 24h
Timer cancel

TIMER ON button
If the button is pressed at system off mode, the auto start time may be set up with a step of 0.5h each time at the range of 0-24 hours.

0 → 24h
Timer cancel

Light button
Press the button once to turn on the light mode, and press it another time, to turn off the light mode.

7.5 Battery installation for the remote controller

- **Guide to operational controls**

General steps:

1 Plug to power supply and press ON/OFF button to start the unit.
2. Press MODE button to select the suitable operation mode.
3. Press the SWING button to make the swing blades swing at a certain angle. Press the button once again to stop the swing
4. Press fan button, to set the desired fan speed.
5. Press +/- button to select the needed temperature.

Selectable steps:

6. To set up the sleep mode by pressing the sleep button at the remote controller.
7. Press TIMER button, and then press +/- button to set scheduled time.

Remarks: To select auto mode, the air conditioner will select automatically the suitable running mode in accordance with the indoor temperature so that a comfortable ambient is given.

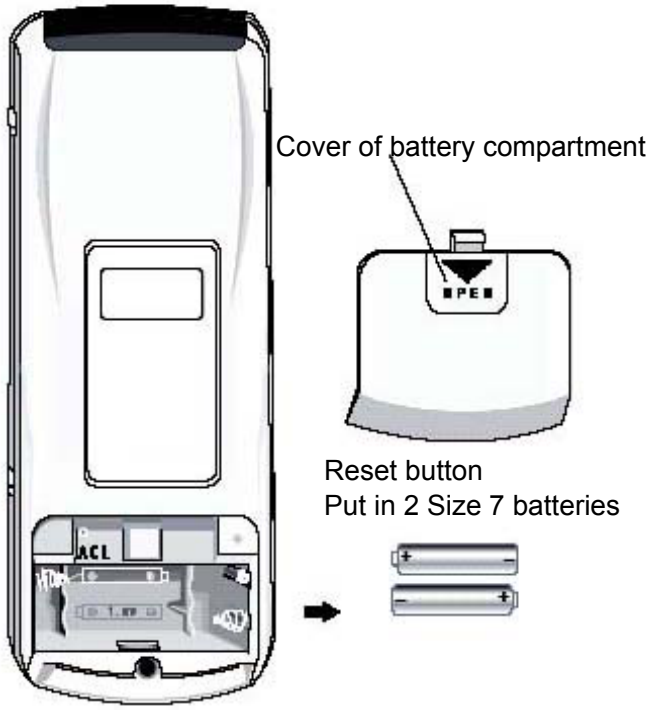
- **Replace the batteries of the remote controller**

The wireless remote controller uses two AAA alkali batteries

1. Slide downward the cover of battery compartment of remote controller and remove the used batteries and replace with two pieces of new batteries (paying attention to the polarities).
2. Close the back cover of the remote controller

Note:

- **Don't mix new and used or different types of two batteries to insert.**
- **If the remote controller is not to be used for several weeks, please take out the battery to prevent the leakage damaging the remote controller.**
- **The operation of remote controller should be in its operation range.**
- **Remote controller should be more than one meter's distance to TV or sound equipment.**



8 Disassembly procedures

8.1 Disassembly procedures for indoor unit

Operation procedures/pictures

8.1.1 Disassembling panel

Push the panel with hand and release the movable latch on the panel, and then lift it upward to take out the panel.

As shown in Fig.8-1

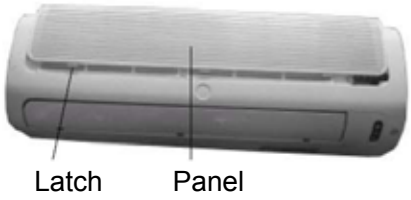


Fig.8-1

8.1.2 Disassembling filter screen and wire clamp

Top the medium section of filter to shed off catches at the both sides. Pull forward to disassemble the filter.

Screw out with a screwdriver one screw that fixes the wire clamp and remove the wire clamp.

As shown in Fig.8-2

Fig.8-2

8.1.3 Disassembling air guide louver board

Firstly remove the middle section of the guide louver from the support frame and then bend slightly the guide louver to remove the guide louver.

As shown in Fig. 8-3

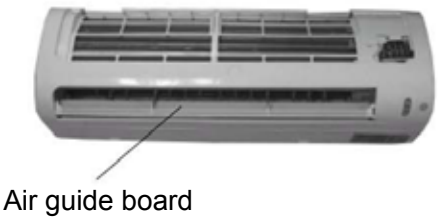


Fig.8-3

Operation procedures/pictures

8.1.4 Disassembling panel body

Open the three taping screws fixing the panel body with a screw driver. Pull upward the panel body and then lift it backward to take out the panel body.
As shown in Fig.8-4

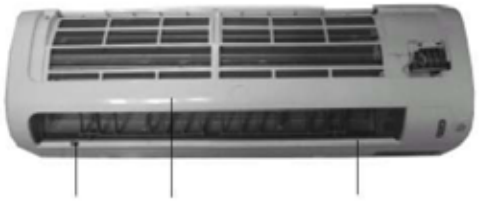


Fig.8-4

8.1.5 Disassemble electric box cover

Press down the latches around the cover of electric box to remove the cover of electric box as shown in Fig.8-5.

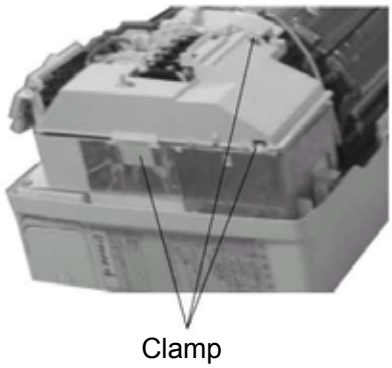


Fig.8-5

8.1.6 Disassembling water-tray

Pull away the terminals of guide louver motor and divide the lower right latch of the water tray with a screw driver. Rotate the water tray to disengage it from the side latch. Remove the water tray as shown in Fig.8-5

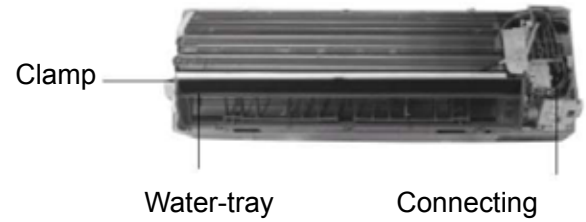


Fig.8-6

Operation procedures/pictures

8.1.7 Disassembling the electric box

Firstly screw off 2 screws at the indicator board and disassemble the indicator board. Then, pull away the terminals of motor. Screw off grounding screw and 2 screws fixing the electric box with a screw driver. Open a latch of the electric box to remove the electric box. as shown in Fig.8-7, 8-8.

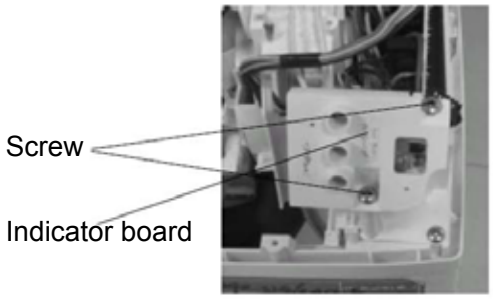


Fig.8-7

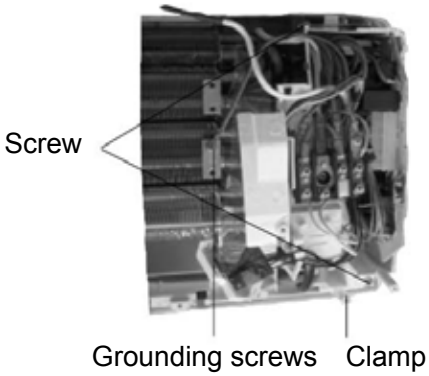


Fig.8-8

8.1.8 Disassembling evaporator assembly

Firstly use a screwdriver to unscrew the screws in the rear pipe-clamping bar of evaporator. Remove the rear pipe clamp bar.

Unscrew the 2 screws at the right side of evaporator.

Unscrew the screw on the left side of the evaporator, and loosen the clasp. Turn the evaporator for a certain angle, and remove the evaporator as shown in Fig.8-8, 8-9, 8-10, 8-11.

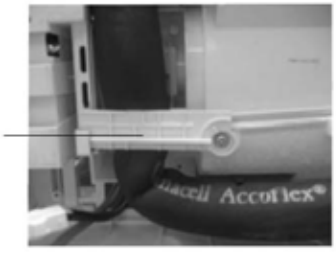


Fig.8-9

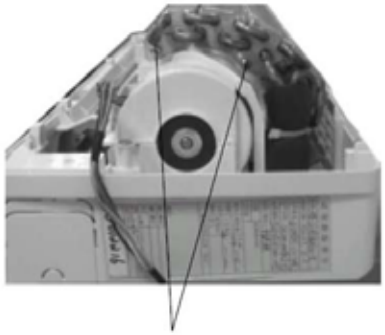


Fig.8-10

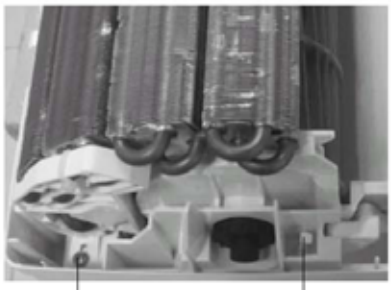


Fig.8-11

8.1.9 Disassembling the motor

Firstly use a screwdriver to unscrew the 2 screws in the board choking of motor, pop up the clasp as shown in the figure, and remove the board choking of the motor as shown in Fig.8-12.

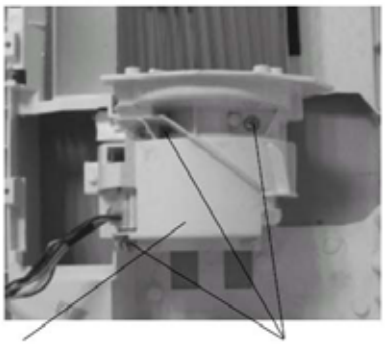


Fig.8-12

Operation procedures/pictures

And then unscrew the set screw for fixing the motor, lift it up backward, and remove the motor as shown in Fig.8-13

Fig.8-13

8.1.10 Remove cross flow fan

After taking out the motor, take out the ring of bearing on the left end of the fan to take off the cross flow fan as shown in Fig.8-14.

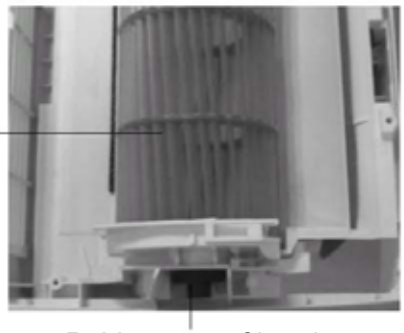


Fig.8-14

8.2 Disassembling procedure of outdoor unit 20

Operation procedures/pictures

8.2.1 Disassembling top cover and handle

Screw off one fixing screw that fixes the handle with screwdriver to take out the handle. Screw off 3 screws around the top cover to remove the top cover as shown in Fig.8-15.

Fig. 8-15

8.2.2 Disassembling the rear grill

Screw off 4 screws around the rear grill with a screw driver to remove the rear grill as shown in Fig.8-16.

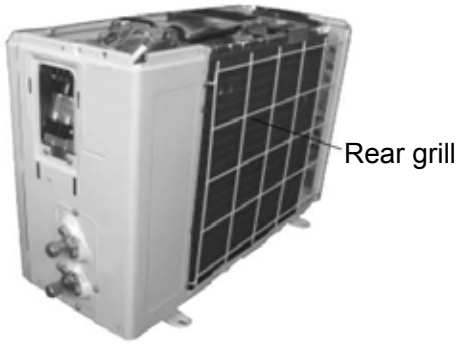


Fig.8-16

8.2.3 Remove the front panel

Screw off 6 screws fixing the front panel with a screw driver to remove front panel as shown in Fig.8-17.

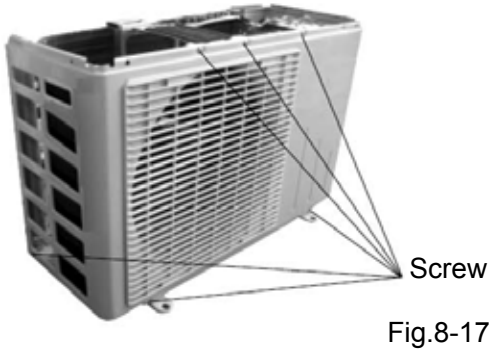


Fig.8-17

Operation procedures/pictures

8.2.4 Disassembling the electric box

Screw off 3 screws of the electric box with a screw driver to remove the electric box as shown in Fig.8-18.

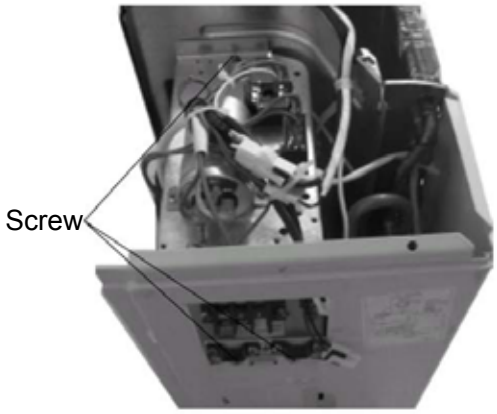


Fig.8-18

8.2.5 Disassembling the right sideboard

Screw off 5 screws at the right sideboard with a screw driver to remove the right sideboard as shown in Fig.8-19.

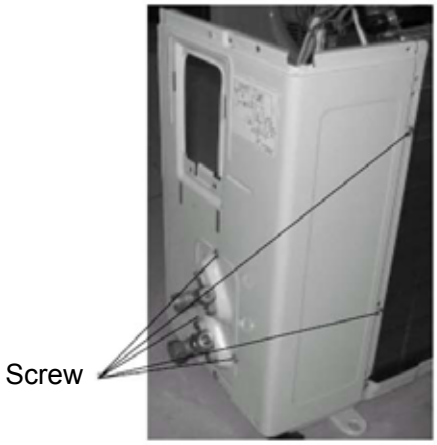


Fig.8-19

8.2.6 Disassembling axial flow fan

Screw off the nut fixing the axial fan with a spanner to pull outward and remove the axial fan as shown in Fig.8-20.

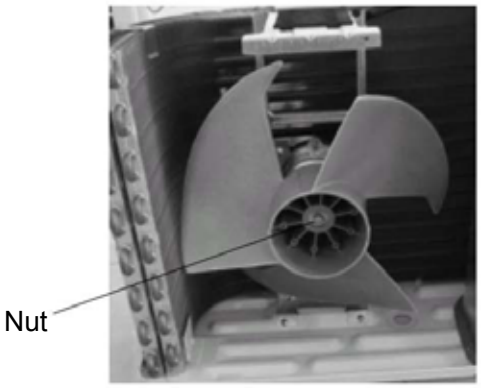


Fig.8-20

Operation procedures/pictures

8.2.7 Disassembling the motor and motor support

With a screw driver, screw off the screw fixing the motor and motor frame to remove the motor and motor frame as shown in Fig.8-21.

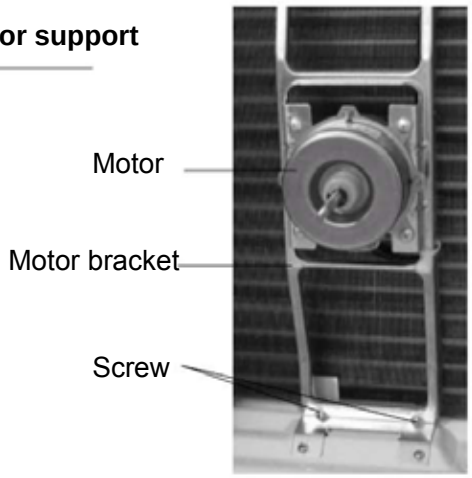


Fig. 8-21

8.3.9 Disassembling capillary assembly

Weld off the welding spots between the capillary assembly and other pipeline connection and take off the capillary assembly as shown in Fig. 8-22.

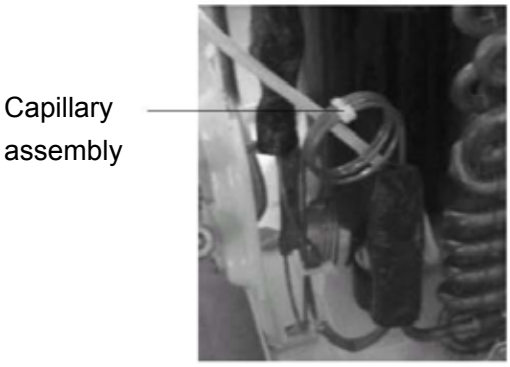


Fig. 8-22

8.2.9 Disassembling valve

With a screw driver, screw off the screw fixing the valve, and then weld off the connecting pipe of the valve to remove the valve as shown in Fig.8-23.

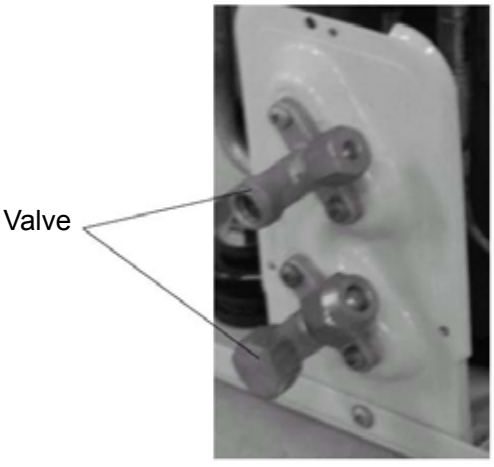


Fig.8-23

Operation procedures/pictures

8.2.10 Disassembling compressor

Weld off two ends of compressor and screw off 3 base screws with a spanner to remove the compressor as shown in Fig.8-24.

Fig.8-24

8.3 Disassembly procedures for outdoor unit 25, 32

Suitable for PRO AIR 109 IN / PRO AIR 109 OUT, PRO AIR 112 IN / PRO AIR 112 OUT

Operation procedures/pictures

8.3.1 Disassembling the top cover

Screw off the one piece of fixing screw that fixes the handle with screwdriver and push down with strength to take out the handle.

Screw off the 3 pieces of screws around the top cover and then lift it upward to take out the top cover as shown in Fig.8-25.

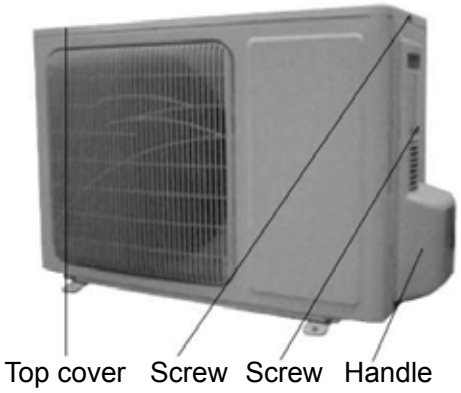


Fig.8-25

8.3.2 Disassembling the net cover

Unscrew 4 tapping screws in the screen enclosure, and remove the screen enclosure as shown in Fig.8-26.

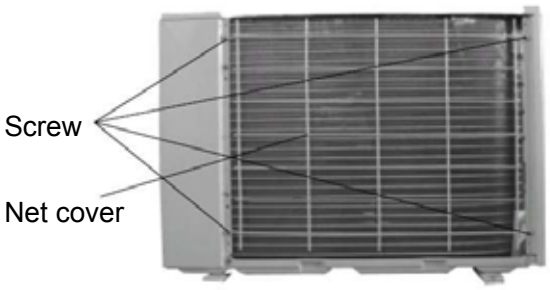


Fig.8-26

8.3.3 Disassembling panel sub-assembly

Unscrew the 5 tapping screws at the valve support chassis and sideboard of the condenser to take off panel assembly as shown in Fig.8-27.

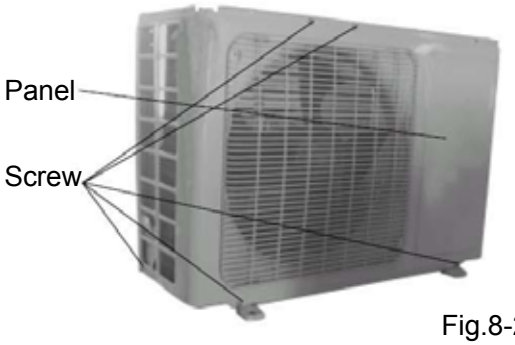


Fig.8-27

Operation procedures/pictures

8.3.4 Dismount the electric mounting board

Screw off the 3 screws fixing the electric device installation board, and pull out the inserting contacts for leads of compressor and fan motor, and remove the electric device installation board as shown in Fig.8-28.

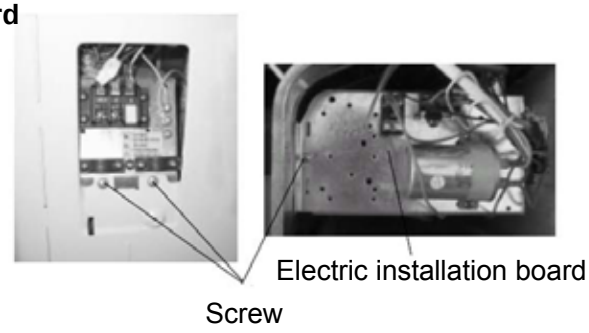


Fig.8-28

8.3.5 Disassembling right sideboard

Unscrew the 5 screws that fix the right sideboard to take out the right sideboard as shown in Fig.8-29.

Fig.8-29

8.3.6 Disassembling axial flow fan

Loosen the fixing nut with a spanner, remove the nut, spring washer and flat washer. Remove the lower axial flow fan with force as shown in Fig.8-30.

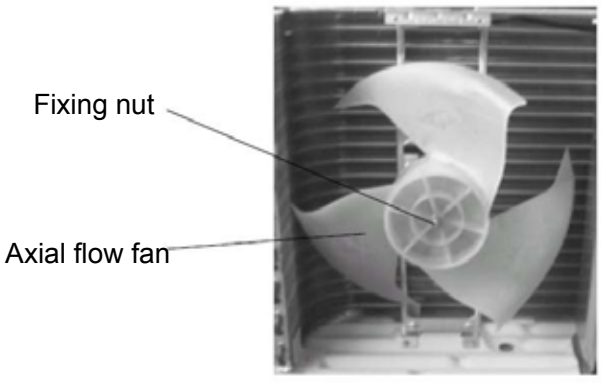


Fig.8-30

8.3.7 Disassembling the motor and motor support

SCREW off 4 tapping screws that fix the motor to take out the motor. Unscrew 2 tapping screws for fixing the motor bracket, pull it upward, and take out the motor bracket as shown in Fig.8-31.

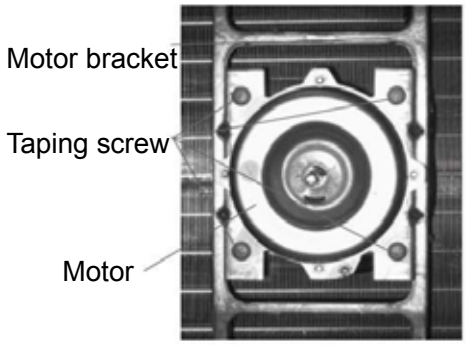


Fig.8-31

8.3.8 Disassembling four-way valve

Unscrew the fixing nut of the four-way valve coil and remove the coil. Wrap the four-way valve with wet sponge and weld off the four welding spots on the four-way valve to take off the four-way valve. The welding process should be performed as quick as possible, ensure that the wrapped spun cotton should be moistened all along; ensure that the pin cords etc. of compressor must not be burnt out by thin flame as shown in Fig.8-32.

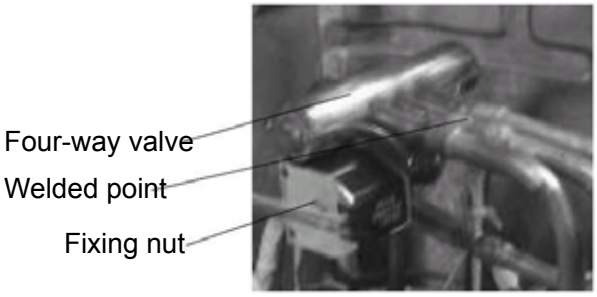


Fig.8-32

8.3.9 Capillary assembly

Weld off the welding spots between the capillary assembly and other pipeline connection and take off the capillary assembly as shown in Fig.8-33.

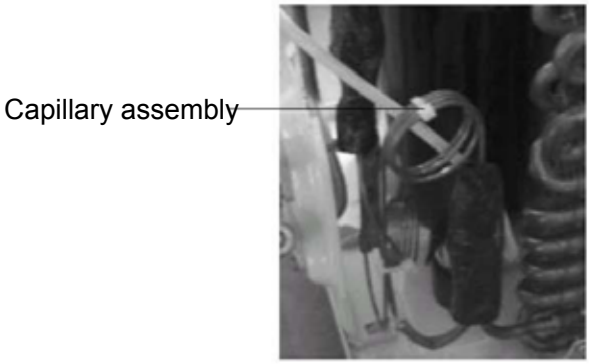


Fig.8-33

Operation procedures/pictures

8.3.10 Disassemblling big and small valves

Screw off 2bolts that fix the big valve, weld off the welding point between the big valve and the air return pipe to take down the big valve.

(Note: when welding off the welding spots, wrap the big valve with wet cloth completely to avoid high-temperature from damaging the valve body.)

Screw off 2 bolts that fix the small valve, weld off the welding point between the small vale and the forked type pipe and take down the small valve as shown in Fig.8-34.

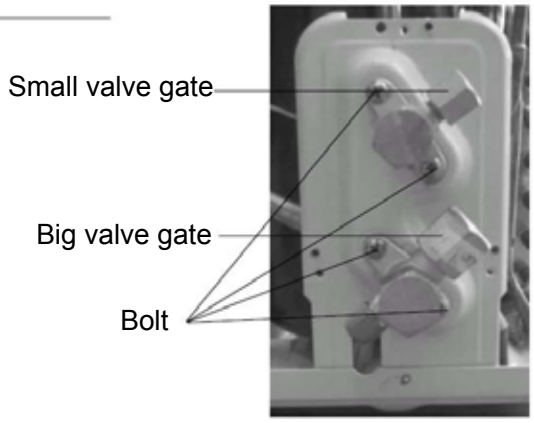


Fig.8-34

8.3.11 Disassembling compressor

Screw off 3 nuts with wash at the base legs of compressor (Remarks: it is required to firstly discharge completely the freon.） Weld off the welding spots as shown in the sucking and exhausted pipings of the compressor. Remove away carefully the pipings and remove the compressor as shown in Fig.8-35.

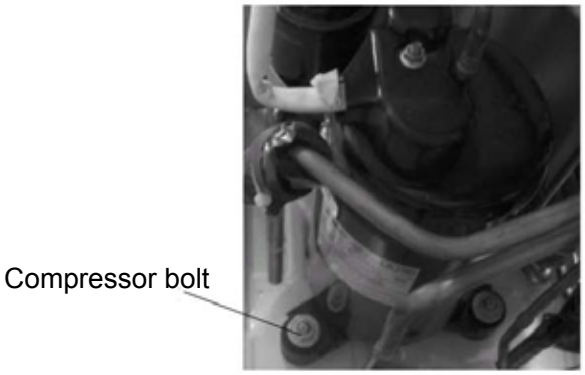


Fig.8-35

8.4 Disassembling procedures for outdoor unit

Suitable for PRO AIR I109 IN / PRO AIR I109 OUT, PRO AIR I112 IN / PRO AIR I112 OUT

Operation procedures/pictures

8.4.1 Disassemble the top cover

Screw off the one piece of fixing screw that fixes the handle with screwdriver and push down with strength to take out the handle.

Screw off the 3 pieces of screws around the top cover and then lift it upward to take out the top cover as shown in Fig.8-36.

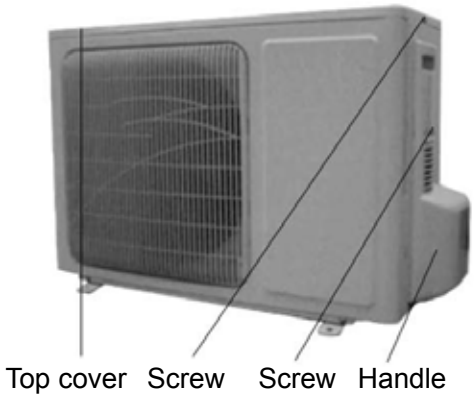


Fig.8-36

8.4.2 Disassembling net cover

Screw off 4 taping screws at the rear sideboard and valve support chassis and condensor sideboard to remove the net cover as shown in Fig.8-37.

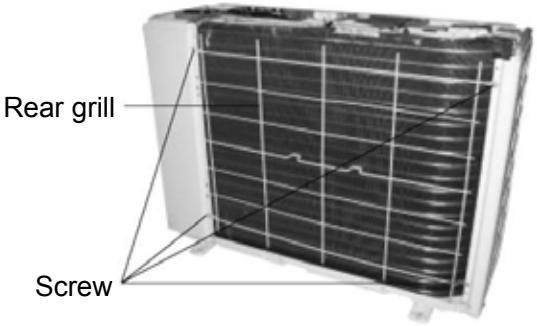


Fig.8-37

8.4.3 Disassembling panel assembly

Screw off the 5 pieces of tapping screws at the valve support chassis and sideboard of the condenser to take off panel assembly as shown in Fig.8-38.

Fig.8-38

Operation procedures/pictures

8.4.4 Disassembling right sideboard

Unscrew the 7 screws that fix the right sideboard to take out the right sideboard as shown in Fig.8-39.

Fig. 8-39

8.4.5 Disassembling reactor box and electric box assembly

Screw off the 2 screws that fix the electric box cover to remove the cover of electric box. Screw off 2 screws fixing the reactor box assembly and remove the frame for temperature sensor to remove the reactor box. Screw off 4 screws fixing the reactor to remove the reactor box.

Screw off 2 screws fixing the electric box and unloose each wire bundle and unplug the connection wire to take off the electric box as shown in Fig.8-40, 8-41, 8-42.

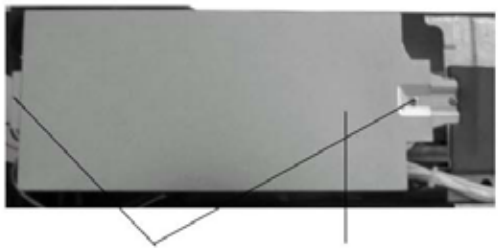


Fig.8-40

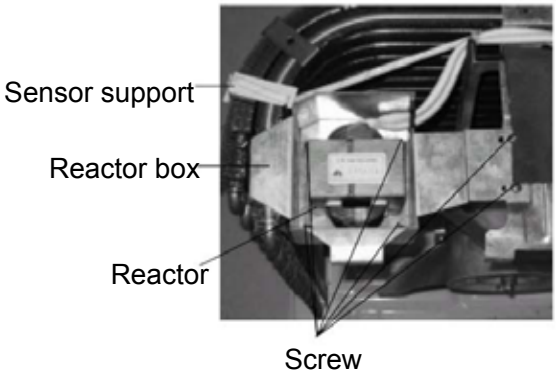


Fig.8-41

Fig. 8-42.

8.4.6 Disassembling axial flow fan

Unloose the fixing nut that fixes the axial flow fan with spanner and take out the nut, spring gasket and flap gasket in sequence as shown in Fig. 8-43.

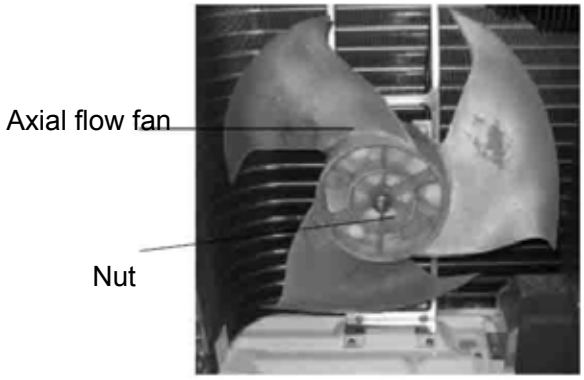


Fig. 8-43.

8.4.7 Disassembling the motor and motor support

Screw off the 4 pieces of tapping screws that fix the motor, and take out the motor. Screw off the 2 screws that fix the motor frame, and take out the motor frame as shown in Fig. 8-44.

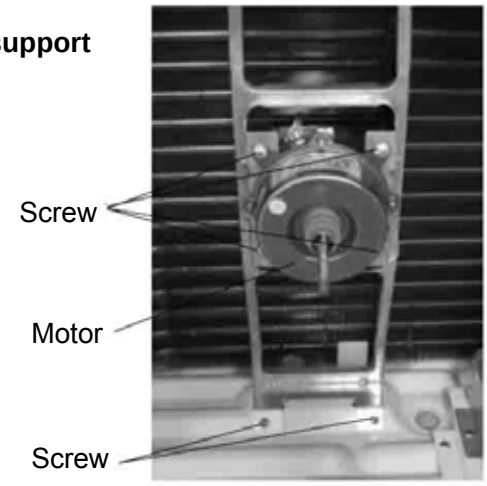


Fig. 8-44

Operation procedures/pictures

8.4.8 Disassembling four-way valve

Screw off the fixing nut of the four-way valve coil and remove the coil. Wrap the four-way valve with wet sponge and weld off the four weld joints on the four-way valve to take off the four-way valve (Remarks: it is required to discharge completely the freon inside). Welding process should be as quickly as possible and the wetness of the wrapping sponge should be maintained all the time. Be sure not to burn out the lead wire of the compressor as shown in Fig.8-45.

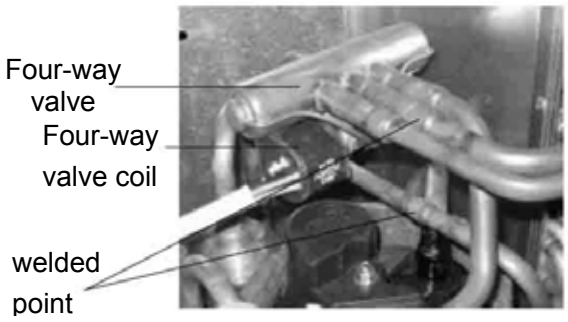


Fig. 8-45.

8.4.9 Disassembling Capillary

Weld off each weld joint of the main capillary and auxiliary capillary to take off the capillary as shown in Fig.8-46.

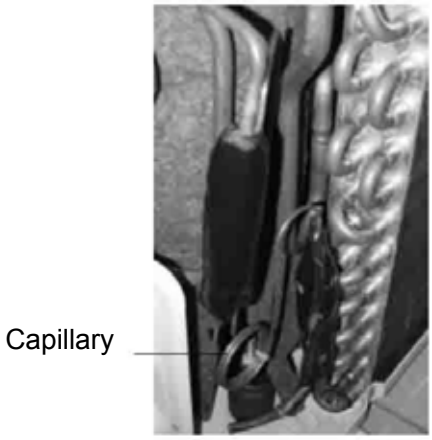


Fig. 8-46.

8.4.10 Disassembling big valve and small valve

Screw off 2 bolts that fix the big valve, weld off the welding point between the big valve and the air return pipe to take down the big valve. Note: when welding off the welding spots, wrap the big valve with wet cloth completely to avoid high-temperature damage to the valve body. Screw off 2 bolts that fix the small valve, and weld off the welding point between the small vale and the forked type pipe and take down the small valve as shown in Fig. 8-47.

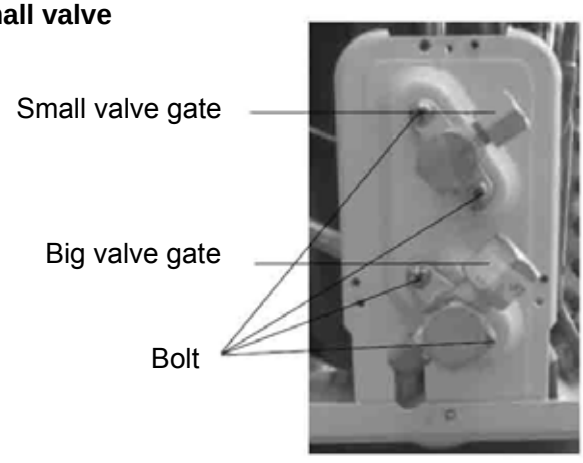


Fig. 8-47.

8. 4. 11 Disassembling compressor

Unloose the 3 pieces of bottom nuts of the compressor, weld off the suction and discharge pipe and remove the pipeline carefully to take out the compressor as shown in Fig. 8-48.

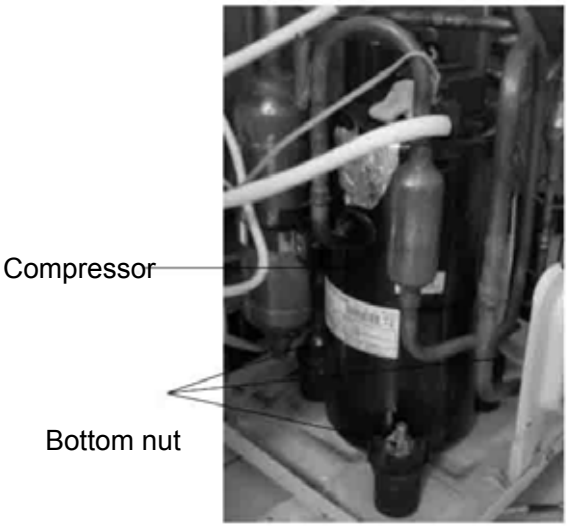


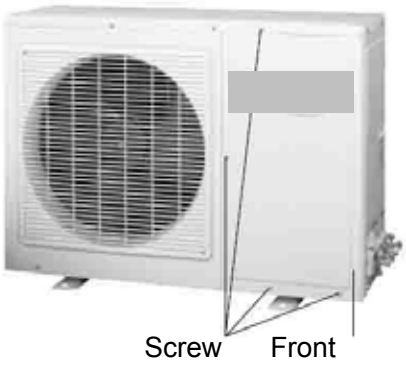
Fig. 8-48

8.5 Disassembly procedures for outdoor unit (one driving two)

Operation procedures/pictures

8.5.1 Disassembling the front sideboard

Screw off 4 fixing screws fastening the front sideboard to disassemble the front sideboard as shown in Fig. 8-49.



sideboard

Fig. 8-49

8.5.2 Disassemble the top cover board

Screw off the screws that fix around the top cover to take off the top cover as shown in Fig. 8-50.

Fig. 8-50.

8.5.3 Disassembling the rear grill

Screw off 4 taping screws fastening the rear sideboard to disassemble the rear grill as shown in Fig. 8-51.

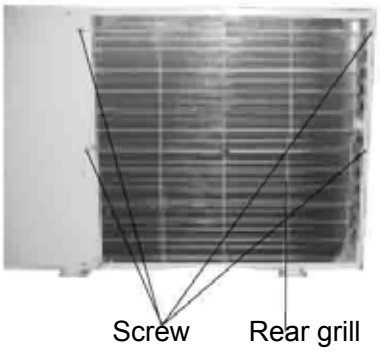


Fig. 8-51

8.5.4 Disassembling the cabinet assembly

Screw off the 8 tapping screws on the cabinet, chassis and condenser sideboard to take off the cabinet assembly as shown in Fig. 8-52.

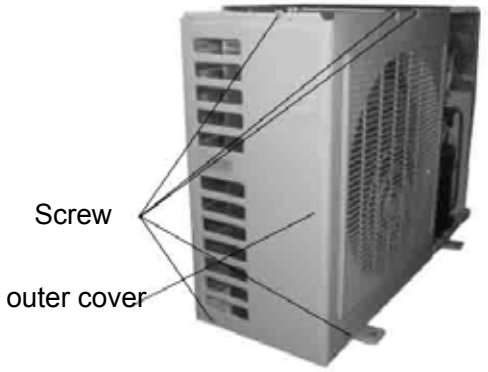


Fig. 8-52.

8.5.5 Disassembling the electric box

Screw off the 2 screws that fix the electric installation board and unplug the lead wire insert of compressor, fan motor and four-way valve (not for cooling only) to take off the electric box as shown in Fig. 8-53.

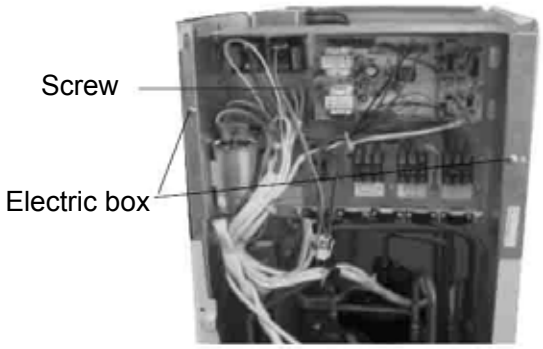


Fig. 8-53

8.5.6 Disassembling rear sideboard

Screw off the screws on the rear sideboard, valve support and chassis assembly and lift it upward to take off the rear sideboard as shown in Fig. 8-54.

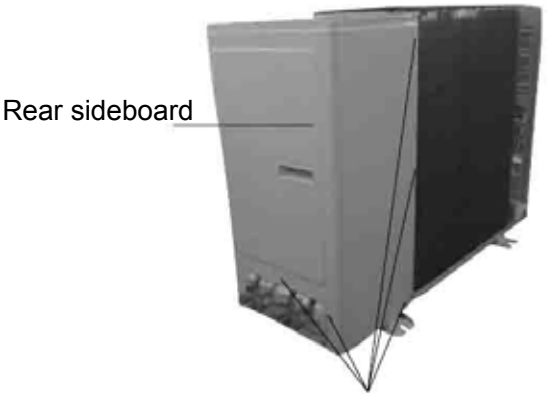


Fig. 8-54

Operation procedures/pictures

8.5.7 Disassembling axial flow fan

Screw off the fixing nut of axial flow fan with a spanner to pull outward the axial flow fan as shown in Fig. 8-55.

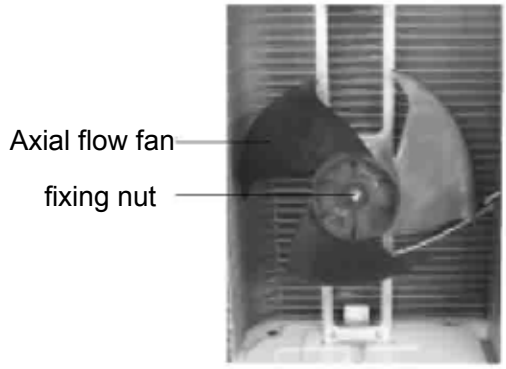


Fig. 8-55

8.5.8 Disassembling the motor and motor support

Screw off the motor fixing bolt on the motor bracket pull out the motor backwards. Then screw off the tapping screws that fix the motor support, lift it upward and take out the motor support as shown in Fig. 8-56.

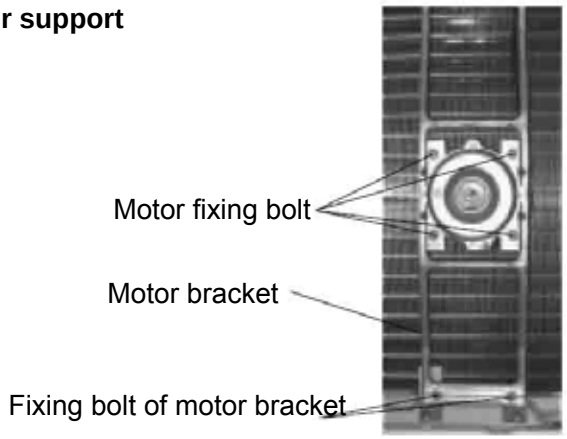


Fig. 8-56

8.5.9 Disassembling Four-way valve

Screw off the fixing nut of the coils of four-way valves (2 pieces) and remove the coil. Wrap the four-way valve with wet sponge and weld off the weld joints on the four-way valve to take off the four-way valve. The welding process should be performed as quick as possible, ensure that the wrapped spun cotton should be moistened all along; ensure that the pin cords etc. of compressor must not be burnt out by thin flame. (Note: it is required to completely discharge freon firstly.)as shown in Fig. 8-57.

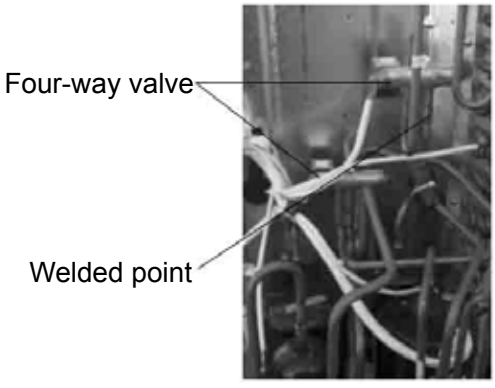


Fig .8-57

8.5.10 Disassembling Capillary

Wrap the capillary with wet sponge and weld off its weld joints with other pipeline. The welding process should be performed as quickly as possible, ensure that the wrapped spun cotton should be moistened all along; ensure that the leading of compressor must not be burnt out by flame. (Note: it is required to completely discharge freon prior to welding the capillary.)as shown in Fig. 8-58.

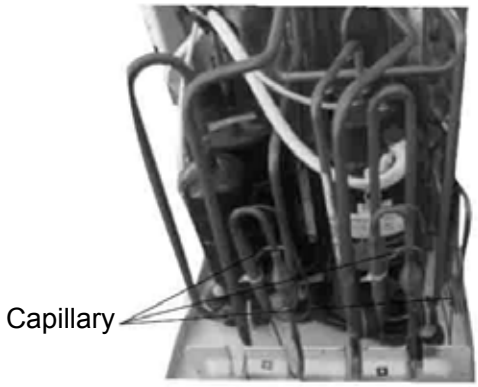


Fig. 8-58

8.5.11 Disassembling valve

Screw off 2 bolts that fix the big valve, weld off the welding point between the big valve and the air return pipe to take down the big valve. Screw off the 2 pieces of bolts that fix the small valve and weld off the welding spots connecting the small valve and the connecting pipe to take off the small valve. (Note: when welding off the welding spots, wrap the big valve with wet cloth completely to avoid high-temperature damage to the valve body)as shown in Fig. 8-59.

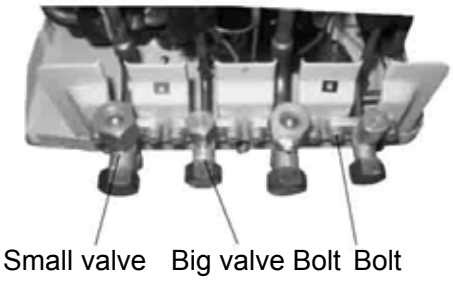


Fig. 8-59

8.5.12 Disassembling compressor

Screw off the 3 washer nuts at the (2) base legs of the compressor. Weld off all the welding points of sucking/discharging pipes for the compressor, and remove carefully the piping. Remove the compressor as shown in Fig. 8-60.

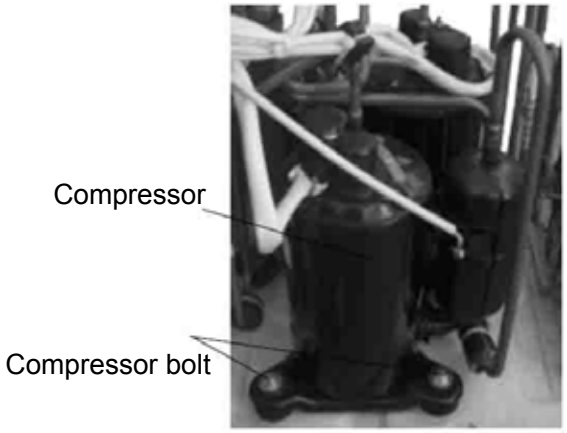


Fig. 8-60

8.6 Disassembling procedures for outdoor unit (one driving two)

Operation procedures/pictures

8.6.1 Disassembling the front sideboard

Screw off the 4 pieces of fixing screws of the front sideboard and pull the handle upward to take off the front sideboard as shown in Fig. 8-61.

Screw Front sideboard

Fig. 8-61

8.6.2 Disassemble the top cover board

Screw off the screws that fix around the top cover to take off the top cover as shown in Fig. 8-62.

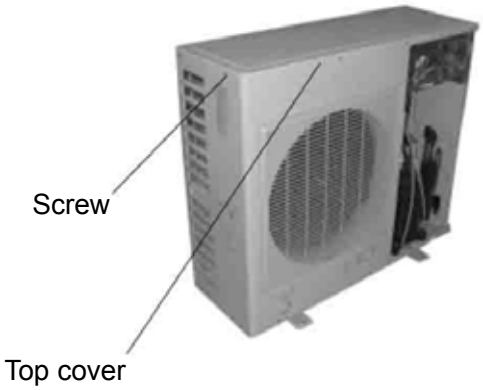


Fig. 8-62

8.6.3 Disassembling the rear grill

Screw off the 4 pieces of tapping screws on the rear sideboard and cabinet to take off the rear grill.

Fig. 8-63

Rear grill Screw

Fig. 8-63

Operation procedures/pictures

8.6.4 Disassembling the cabinet assembly

Screw off the 8 tapping screws on the cabinet, chassis and condenser sideboard to take off the cabinet assembly as shown in Fig. 8-64.

Fig. 8-64

8.6.5 Disassembling the electric box

Screw off the screws fixing the electric device installation board, and pull out the inserting contacts for leads of compressor and fan motor, and remove the electric device installation board as shown in Fig. 8-65.

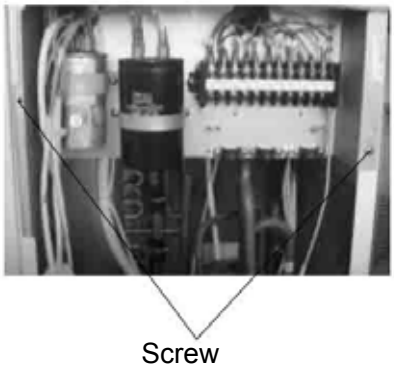


Fig. 8-65

8.6.6 Disassembling rear sideboard

Screw off the screws (14 pieces) that fix the rear sideboard, valve support and chassis assembly and lift it upward to take off the rear sideboard as shown in Fig. 8-66, 8-67.

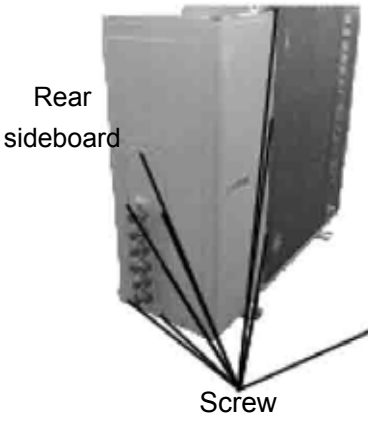


Fig. 8-66

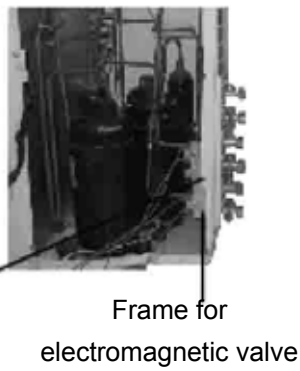


Fig.8-67

Operation procedures/pictures

8.6.7 Disassembling axial flow fan

Screw off the tapping screws on the cabinet, chassis and condenser sideboard to take off the cabinet assembly as shown in Fig. 8-68.

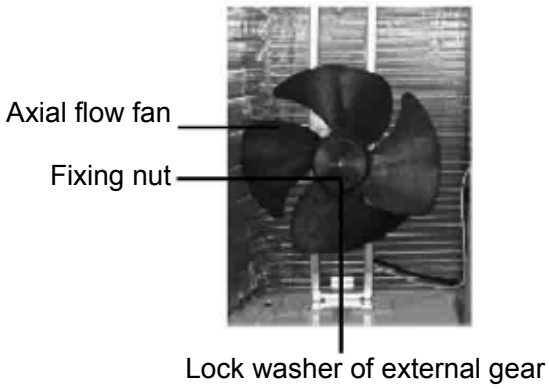


Fig. 8-68

8.6.8 Disassembling the motor and motor support

Screw off the motor fixing bolt on the motor bracket, pull out the motor backwards. Then screw off the tapping screws that fix the motor support, lift it upward and take out the motor support as shown in Fig. 8-69.

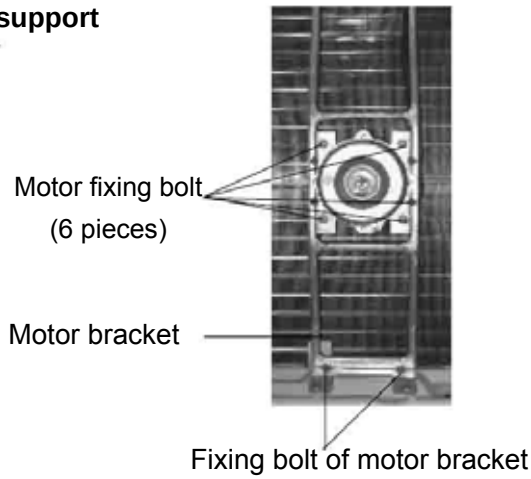


Fig. 8-69

8.6.9 Disassembling valve

Screw off 2 bolts that fix the big valve, weld off the welding point between the big valve and the air return pipe to take down the big valve. Note: when welding off welding spots, wrap the big valve with wet cloth completely to avoid high-temperature damage to the valve body. Screw off 2 bolts that fix the small valve, and weld off the welding point between the small vale and the forked type pipe and take down the small valve as shown in Fig. 8-70.

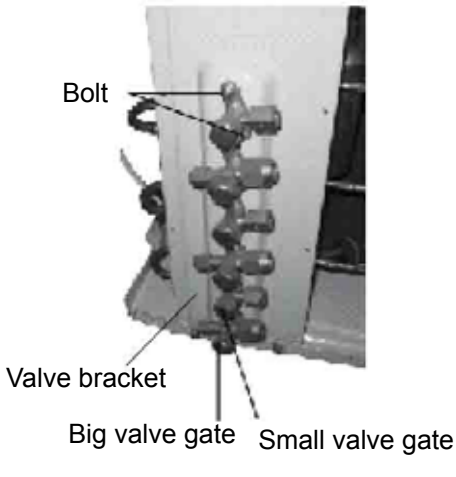


Fig. 8-70

8.6.10 Disassembling the compressor

Release the 3 washer nuts at the legs of compressors (2 sets)(Remarks: it is required to completely discharge freon). Weld off the welding spots on suction /exhaust piping of compressor, take away pipeline with care, and take out the compressor as shown in Fig. 8-71.

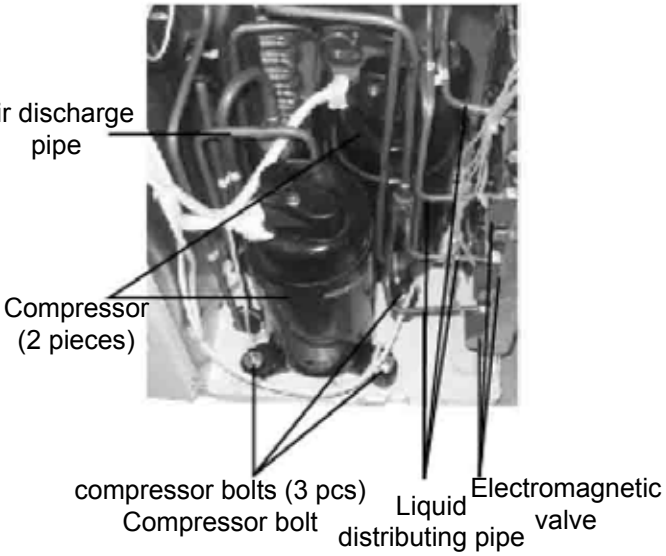


Fig. 8-71

8.7 Disassembling procedures for outdoor unit (one driving four)

Operation procedures/pictures

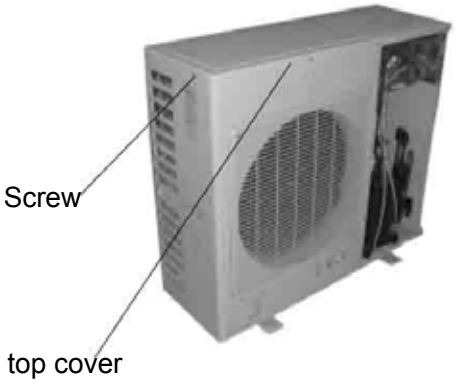
8.7.1 Disassembling the front sideboard

Screw off the 4 pieces of fixing screws of the front sideboard and pull the handle upward to take off the front sideboard as shown in Fig. 8-72.

Fig. 8-72

8.7.2 Disassemble the top cover board

Screw off the screws that fix around the top cover to take off the top cover as shown in Fig. 8-73.



8.7.3 Disassembling the rear grill

Screw off the 4 pieces of tapping screws on the rear sideboard and cabinet to take off the rear grill as shown in Fig. 8-74.

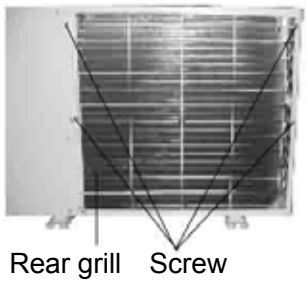


Fig. 8-74

Operation procedures/pictures

8.7.4 Disassembling the cabinet assembly

Screw off the 8 tapping screws on the cabinet, chassis and condenser sideboard to take off the cabinet assembly as shown in Fig. 8-75.

Fig. 8-75

8.7.5 Disassembling the electric box

Screw off the screws fixing the electric device installation board, and pull out the inserting contacts for leads of compressor and fan motor, and remove the electric device installation board as shown in Fig. 8-76.

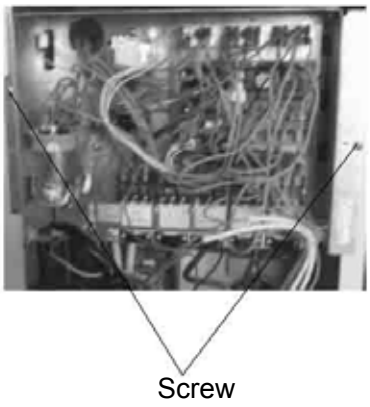


Fig. 8-76

8.7.6 Disassembling rear sideboard

Screw off the screws (14 pieces) that fix the rear sideboard, valve support and chassis assembly and lift it upward to take off the rear sideboard as shown in Fig. 8-77, 8-78.

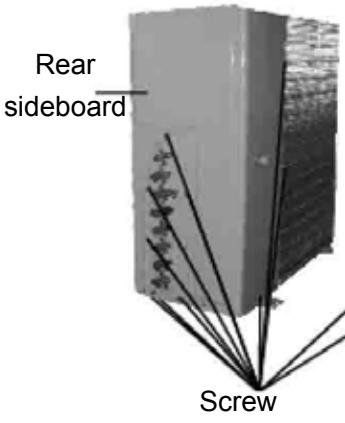


Fig. 8-20

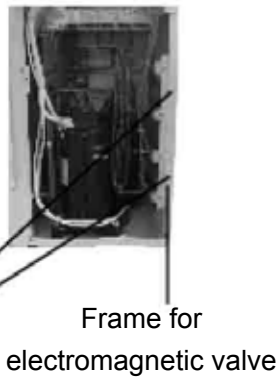


Fig. 8-21

Operation procedures/pictures

8.7.7 Disassembling axial flow fan

Screw off the tapping screws on the cabinet, chassis and condenser sideboard to take off the cabinet assembly as shown in Fig. 8-79.

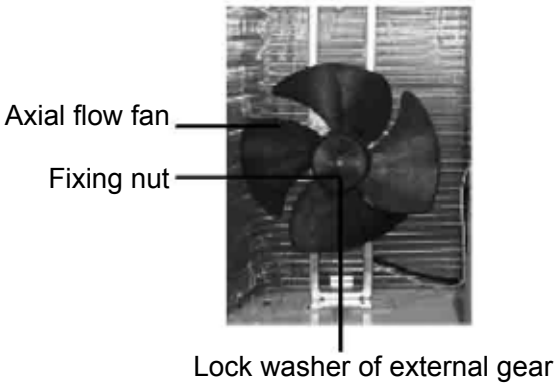


Fig. 8-79

8.7.8 Disassembling the motor and motor support

Screw off the motor fixing bolt on the motor bracket, pull out the motor backwards. Then screw off the tapping screws that fix the motor support, lift it upward and take out the motor support as shown in Fig. 8-80.

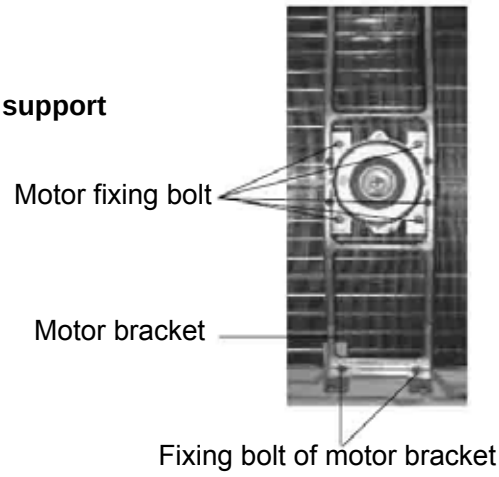


Fig. 8-80

8.7.9 Disassembling valve

Screw off 2 bolts that fix the big valve, weld off the welding point between the big valve and the air return pipe to take down the big valve. Note: when welding off welding spots, wrap the big valve with wet cloth completely to avoid high-temperature damage to the valve body. Screw off 2 bolts that fix the small valve, and weld off the welding point between the small vale and the forked type pipe and take down the small valve as shown in Fig. 8-81.

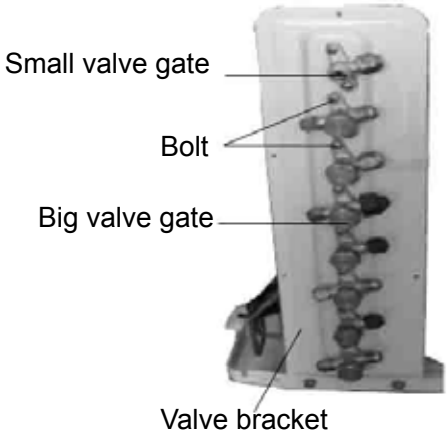


Fig. 8-81

8.2.10 Disassembling the compressor

Release the 3 washer nuts at the legs of compressors (2 sets)(Remarks: it is required to completely discharge freon). Weld off the welding spots on suction /exhaust piping of compressor, take away pipeline with care, and take out the compressor as shown in Fig. 8-82.

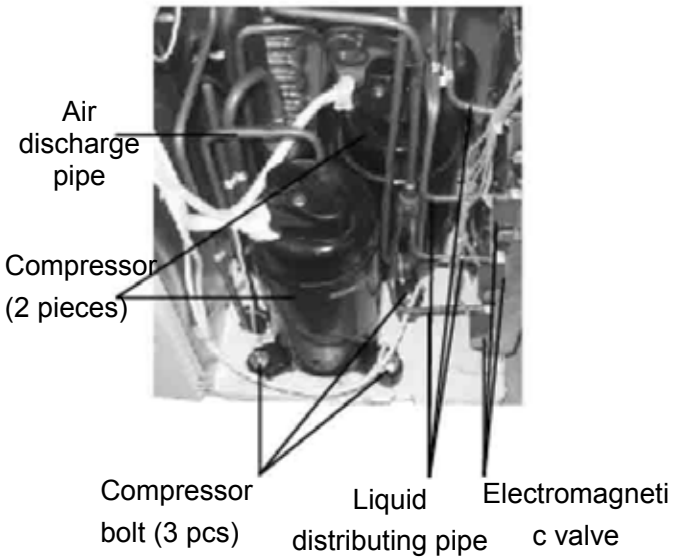
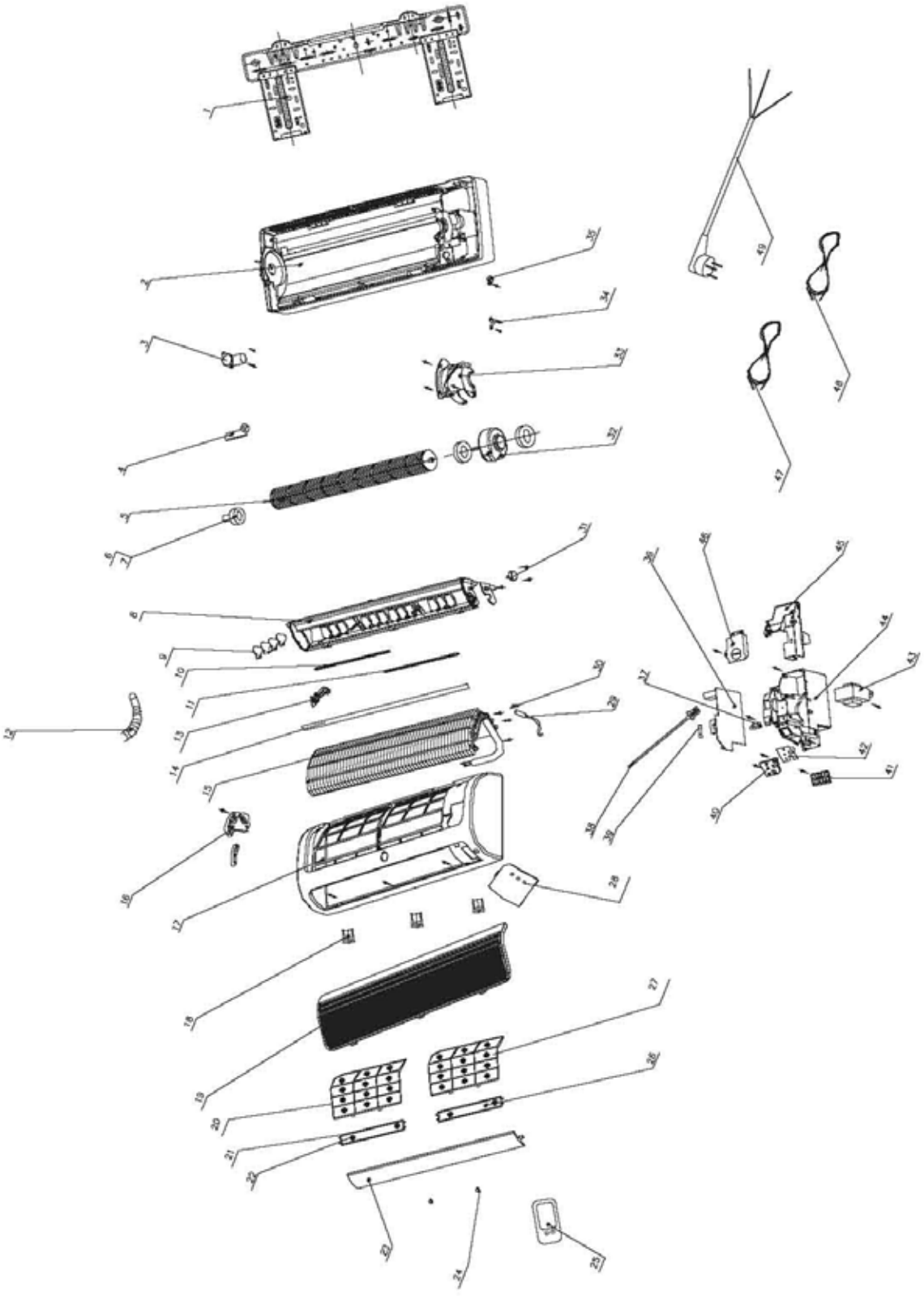


Fig. 8-82

9 Explosive view and parts list

9.1 Explosive view of parts and components of indoor unit



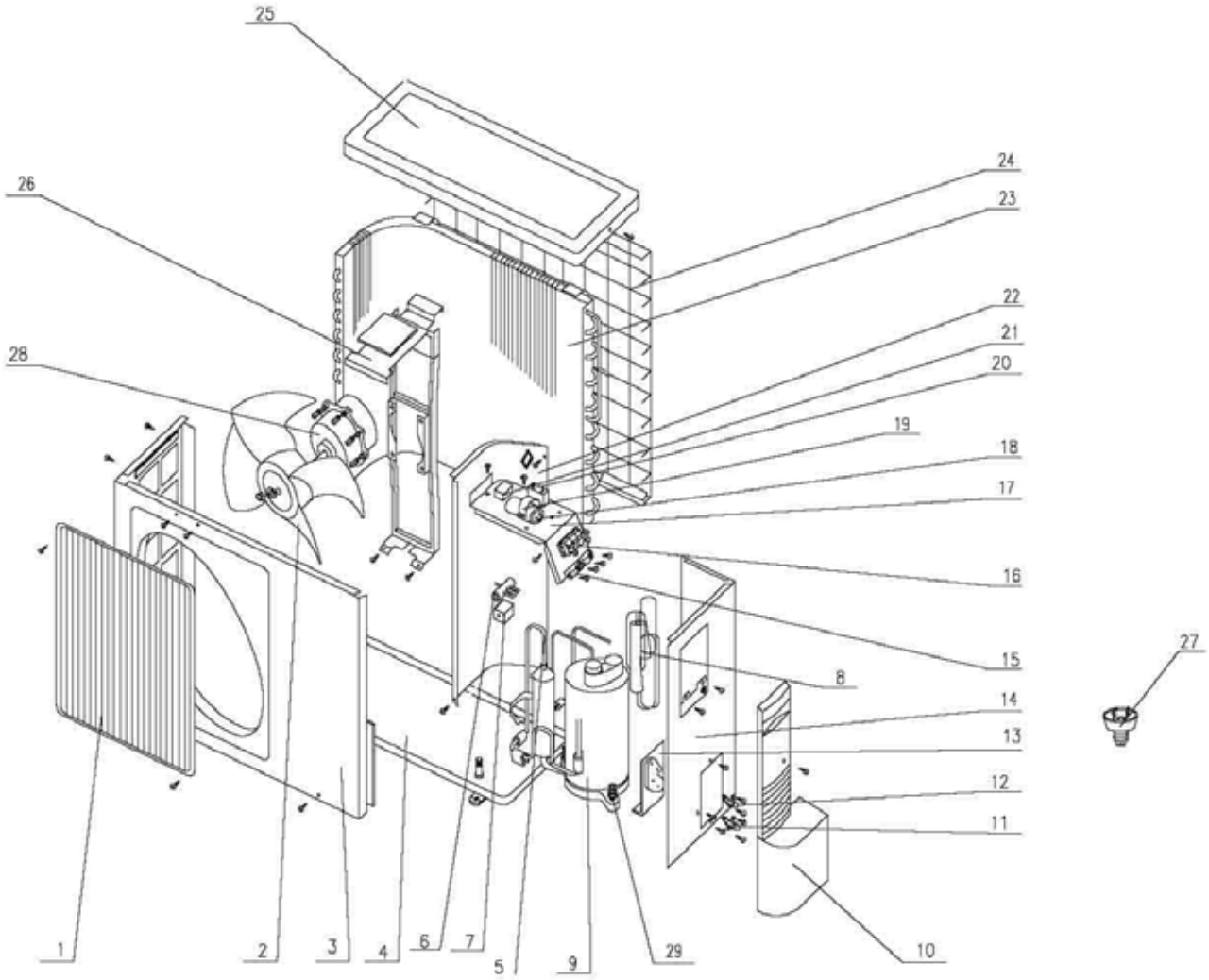
9.2 Explosive view of parts of outdoor unit

No.	Name of parts	Code No. of parts			Qty.
		PRO AIR 107 IN	PRO AIR 109 IN	PRO AIR 112 IN	
1	Hanging board	01252220	01252220	01252220	1
2	Bottom case	22202447	22202447	22202447	1
3	Water chute, evaporator	06122001	06122001	06122001	1
4	Pressure board of connecting pipe	24242001	24242001	24242001	1
5	Cross flow fan	10352001	10352001	10352001	1
6	Fan bearing	76512210	76512210	76512210	1
7	Rubber ring of cross flow fan	76512203	76512203	76512203	1
8	Water-tray	20182006	20182006	20182006	1
9	Swing blade	10512002	10512002	10512002	12
10	Connecting lever 1	10582002	10582002	10582002	1
11	Connecting lever 2	10582003	10582003	10582003	1
12	Drainage pipe	05232411	05232411	05232411	1
13	Separating lever	10582001	10582001	10582001	2
14	Water leading plate of evapurator	/	/	/	1
15	Evaporator parts	010020935	010020935	010020936	1
16	Angular bracket, evaporator	24212016	24212016	24212016	1
17	Panel body	20002345	20002345	20002345	1
18	Screw Cover	242520012	242520012	242520012	3
19	Panel	20002346	20002346	20002346	1
20	Filter net (left)	11122041	11122041	11122041	1
21	Support for purifier	24222001	24222001	24222001	2
22	Air cleaner A	11012002	11012002	11012002	1
23	air guide board	10512070	10512070	10512070	1
24	Guide board axle sleeve	10542011	10542011	10542011	3
25	Remote controller Y512	30512506	30512506	30512506	1
26	Filter screen B, cleaning cartridge	11012003	11012003	11012003	1
27	Filter net (right)	11122040	11122040	11122040	1
28	Housing of indicator board	22262008	22262008	22262006	1
29	Indoor pipe temperature sensor	390000595	390000595	390000595	1
30	Sensor insert B	42020063	42020063	42020063	1
31	Stepping motor MP24GA	15212102	15212102	15212102	1
32	Motor FN8G	15012037	15012108	15012108	1
33	Motor hold-down board	26112014	26112014	26112014	1
34	Wire clamping tag	42012415	42012415	42012415	1
35	Electric wire holder	71010103	71010103	71010103	1
36	Main board 5K522AJ	30055740	30055740	30055740	1
37	Wire clamping chute	70482001	70482001	70482001	1
38	Indoor ambient temperature sensor	390001912	390001912	390001912	1
39	Protective pipe	46010013	46010013	46010013	1
40	indicator light frame	24212045	24212045	24212045	1
41	Terminal board GT5A4	42010260	42010260	42010260	1
42	Reception board JD	30046087	30046087	30046082	1
43	Power transformer SC28B1	43110170	43110170	43110170	1
44	Electric box A	20102001	20102001	20102001	1
45	Electric box top cover	20112010	20112010	20112010	1
46	Electric box top cover 1	20112006	20112006	20112006	1
47	Rubber-sleeve flexible wire (A type/four-core)	400205253	400205253	400205253	1
48	Rubber-sleeve flexible wire (A type/3-core)	400205264	400205264	400205265	1
49	Power cable	400204643	400204643	400204643	1

No.	Name of parts	Code No. of parts			Qty.
		PRO AIR I109 IN	PRO AIR I112 IN	PRO AIR 218 IN	
1	Hanging board	01252220	01252220	01252220	1
2	Bottom case	22202447	22202447	22202447	1
3	Water chute, evaporator	06122001	06122001	06122001	1
4	Pressure board of connecting pipe	24242001	24242001	24242001	1
5	Cross flow fan	10352001	10352001	10352001	1
6	Fan bearing	76512210	76512210	76512210	1
7	Rubber ring of cross flow fan bearing	76512203	76512203	76512203	1
8	Water-tray	20182006	20182006	20182006	1
9	Swing blade	10512002	10512002	10512002	12
10	Connecting lever 1	10582002	10582002	10582002	1
11	Connecting lever 2	10582003	10582003	10582003	1
12	Drainage pipe	05232411	05232411	5232411	1
13	Separating lever	10582001	10582001	10582001	2
14	Water leading plate of evapurator	/	/	/	1
15	Evaporator parts	010020935	010020935	010020935	1
16	Angular bracket, evaporator	24212016	24212016	24212016	1
17	Panel body	20002345	20002345	20002345	1
18	Screw Cover	242520012	242520012	242520012	3
19	Panel	20002346	20002346	20002346	1
20	Filter net (left)	11122041	11122041	11122041	1
21	Support for purifier	24222001	24222001	24222001	2
22	Air cleaner A	11012002	11012002	11012002	1
23	air guide board	10512070	10512070	10512070	1
24	Guide board axle sleeve	10542011	10542011	10542011	3
25	Remote controller Y512	30512506	30512506	30512506	1
26	Filter screen B, cleaning cartridge	11012003	11012003	11012003	1
27	Filter net (right)	11122040	11122040	11122040	1
28	Housing of indicator board	22262008	22262008	22262008	1
29	Indoor pipe temperature sensor (20K)	390000595	390000595	390000595	1
30	Sensor insert B	42020063	42020063	42020063	1
31	Stepping motor MP24GA	15212102	15212102	15212102	1
32	Motor FN8G	15012108	15012108	15012108	1
33	Motor hold-down board	26112014	26112014	26112014	1
34	Wire clamping tag	42012415	42012415	42012415	1
35	Electric wire holder	71010103	71010103	71010103	1
36	Main board 5K522AJ	30039247	30039247	30055736	1
37	Wire clamping chute	70482001	70482001	70482001	1
38	Indoor ambient temperature sensor (15K)	390001912	390001912	390001912	1
39	Protective pipe	46010013	46010013	46010013	1
40	indicator light frame	24212045	24212045	24212045	1
41	Terminal board GT5A4	42011138	42011138	42010184	1
42	Reception board JD	30046086	30046086	30046087	1
43	Power transformer SC28B1	43110170	43110170	43110170	1
44	Electric box A	20102001	20102001	20102001	1
45	Electric box top cover	201120101	201120101	20112010	1
46	Electric box top cover 1	20112006	20112006	20112006	1
47	Rubber-sleeve flexible wire (A type/four-core)	/	/	400205235	1
48	Rubber-sleeve flexible line (A type/3-core)	400205236	400205236	40030328	1
49	Power cable	40020203	40020203	/	1

No.	Name of parts	Code No. of parts			Qty.
		PRO AIR 218 IN	PRO AIR 112 IN	GE AIR 428 IN	
1	Hanging board	01252220	01252220	01252220	1
2	Bottom case	22202447	22202447	22202447	1
3	Water chute, evaporator	06122001	06122001	06122001	1
4	Pressure board of connecting pipe	24242001	24242001	24242001	1
5	Cross flow fan	10352001	10352001	10352001	1
6	Fan bearing	76512210	76512210	76512210	1
7	Rubber ring of cross flow fan bearing	76512203	76512203	76512203	1
8	Water-tray	20182006	20182006	20182006	1
9	Swing blade	10512002	10512002	10512002	12
10	Connecting lever 1	10582002	10582002	10582002	1
11	Connecting lever 2	10582003	10582003	10582003	1
12	Drainage pipe	05232411	05232411	05232411	1
13	Separating lever	10582001	10582001	10582001	2
14	Water leading plate of evapurator	/	/	/	1
15	Evaporator parts	010020935	010020935	010020935	1
16	Angular bracket, evaporator	24212016	24212016	24212016	1
17	Panel body	20002345	20002345	20002345	1
18	Screw Cover	242520012	242520012	242520012	3
19	Panel	20002346	20002346	20002346	1
20	Filter net (left)	11122041	11122041	11122041	1
21	Support for purifier	24222001	24222001	24222001	2
22	Air cleaner A	11012002	11012002	11012002	1
23	air guide board	10512070	10512070	10512070	1
24	Guide board axle sleeve	10542011	10542011	10542011	3
25	Remote controller Y512	30512506	30512506	30512506	1
26	Filter screen B, cleaning cartridge	11012003	11012003	11012003	1
27	Filter net (right)	11122040	11122040	11122040	1
28	Housing of indicator board	22262006	22262006	22262006	1
29	Indoor pipe temperature sensor (20K)	390000594	390000594	390000594	1
30	Sensor insert B	42020063	42020063	42020063	1
31	Stepping motor MP24GA	15212102	15212102	15212102	1
32	Motor FN8G	15012108	15012108	15012108	1
33	Motor hold-down board	26112014	26112014	26112014	1
34	Wire clamping tag	42012415	42012415	42012415	1
35	Electric wire holder	71010103	71010103	71010103	1
36	Main board 5K522AJ	30055799	30055799	30055799	1
37	Wire clamping chute	70482001	70482001	70482001	1
38	Indoor ambient temperature sensor (15K)	390000453	390000453	390000453	1
39	Protective pipe	46010014	46010014	46010014	1
40	indicator light frame	24212045	24212045	24212045	1
41	Terminal board GT5A4	42011233	42011233	42011233	1
42	Reception board JD	30046082	30046082	30046082	1
43	Power transformer SC28B1	43110170	43110170	43110170	1
44	Electric box A	20102001	20102001	20102001	1
45	Electric box top cover	20112010	20112010	20112010	1
46	Electric box top cover 1	20112006	20112006	20112006	1
47	Rubber-sleeve flexible wire (A type/four-core)	400205235	400205235	400205235	1
48	Rubber-sleeve flexible line (A type/3-core)	/	/	/	1
49	Power cable	/	/	/	1

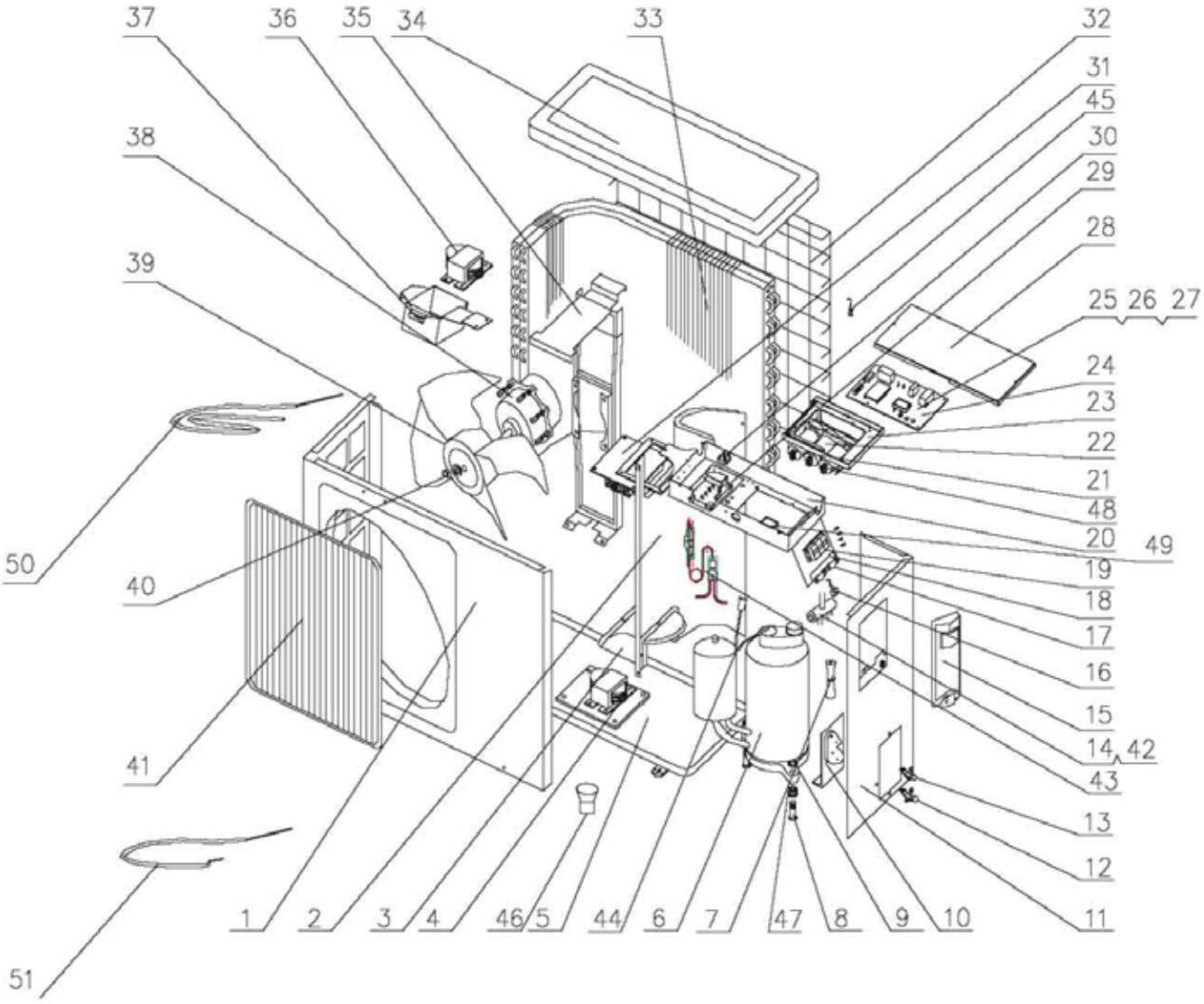
9. 3 Explosive view of parts and components of outdoor unit



9.2 Explosive view of parts of outdoor unit

No.	Name of parts	Code No. of parts			Qty.
		PRO AIR 107 OUT	PRO AIR 109 OUT	PRO AIR 112 OUT	
1	Face cover	22263002	22413431	22413431	1
2	Axial flow fan	10333002	10333413	10333413	1
3	Panel	20003100	01533012	01533012	1
4	Chassis assembly	01203171	01203169	01203179	1
5	Four-way valve assembly	03023176	03023081	03023116	1
6	Four-way valve	430004022	430004022	430004022	1
7	Four-way valve and fittings	43000400	43000400	43000400	1
8	capillary assembly	030033581	030033791	030033531	1
9	Compressor and auxiliaries GK080PAD	00100086	00100368	00100378	1
10	Big handle	26233101	26233433	26233433	1
11	valve 3/8	07100005	07100005	07100006	1
12	valve 1/4	07100003	07100003	07100003	1
13	Valve bracket	01713424	01713041	01713041	1
14	Right sideboard assembly	01303151	01302004	01302004	1
15	Electric wire holder	/	71010103	71010103	/
16	Terminal board (4 phases)	42010254	42010254	42010254	1
17	Electric box	01413034	01413425	01413425	1
18	Compressor capacitor	33000017	33000017	33000017	1
19	Capacitor Clamp	02143014	02143401	02143401	1
20	Fan capacitor	33010020	33010025	33010026	1
21	Terminal board 2-8	42011103	42011103	42011103	1
22	Separator assembly	01233101	01233417	01233417	1
23	Condenser part	011032862	011032812	011032813	1
24	Rear grill	11123301	01473030	01473030	1
25	top cover assembly	01253263	01253261	01253261	1
26	Motor bracket	01703029	01703391	01703391	1
27	Drainage connector of outdoor unit	06123401	06123401	06123401	1
28	Motor FW20F	15013156	150130671	15013067	1
29	Compressor cushion	76710232	76710240	76710224	3

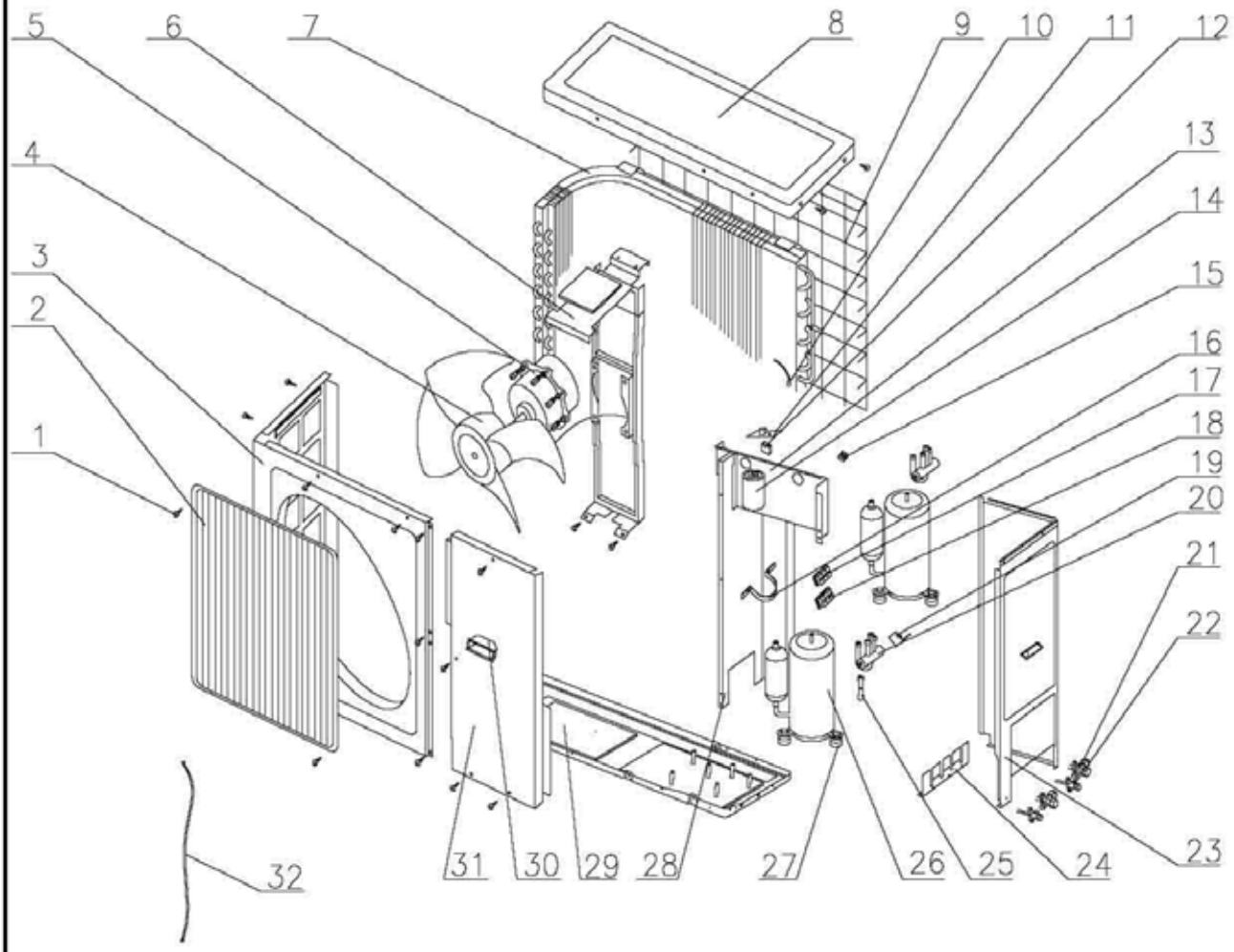
9.5 Explosive view of parts and components of outdoor unit (frequency converter)



9.6 List of parts and components of outdoor unit (frequency converter)

No.	Name of parts	Code No. of parts		Qty.
		PRO AIR I109 OUT	PRO AIR I112 OUT	
1	Panel	01533005	01533005	1
2	separation board	01233381	01233381	1
3	reactor box	01413504	01413504	1
4	Reactor	143130165	43130165	1
5	Chassis assembly	01203015	01203015	1
6	Compressor EU1011DV	00100125	00100125	1
7	One-way valve	07130103	07130103	1
8	bolt	70212014	70212014	3
9	Nut with gasket M8	70310014	70310014	3
10	Valve bracket	01713041	01713041	1
11	Right sideboard	01303048	01303048	1
12	valve 1/2"	07100006	07100006	1
13	valve 1/4"	07100003	07100003	1
14	Four-way valve	430004032	430004032	1
15	Big handle	26233433	26233433	1
16	Four-way valve and fittings	430004002	430004002	1
17	Electric wire holder	71010103	71010103	1
18	Insulation spacer D	70410525	70410525	1
19	Terminal board (3 phases) GT336C	42011071	42011071	1
20	Electric box	201413051	01413051	1
21	Capacitor 1	33010054	33010057	1
22	Capacitor 2	33310054	33310054	1
23	Electric box A	20103501	20103501	1
24	Main board W923HA	30039246	30039245	1
25	Outdoor ambient temperature sensor (15K)	390001781	390001781	1
26	Outdoor pipe temperature sensor (20K)	390000596	390000596	1
27	Air discharge temperature sensor (50K)	39000016	39000016	1
28	Electric box cover	01413048	01413048	1
29	power module	32210096	32210093	1
30	rectifier S15VB60	46010601	46010602	2
31	radiator	49010212	49010212	1
32	net cover	01473030	01473030	1
33	Condenser part	011035072	011035072	1
34	Top cover board	01253443	01253443	1
35	Motor bracket	01703391	01703391	1
36	Reactor 2	243130169	43130169	1
37	Reactor box B	B01413503	01413503	1
38	Motor FW25K	150130671	150130671	1
39	Axial flow fan	10333413	10333413	1
40	Nut M6	70310131	70310131	1
41	Front panel grill	22413431	22413431	1
42	4-way valve	03023234	03023234	1
43	capillary assembly	03003618	03003618	1
44	Compressor overload	Provided together with compressor	Provided together with compressor	1
45	Sensor holder B	42020063	42020063	1
46	Drain adapter	06123401	06123401	1
47	compressor gasket	Provided together with compressor	Provided together with compressor	3
48	Capacitor 3	33010803	33010803	1
49	Capacitor 4	33010026	33010026	1
50	Electric heater belt 1	/	/	1
51	Electric heater belt 2	/	/	1

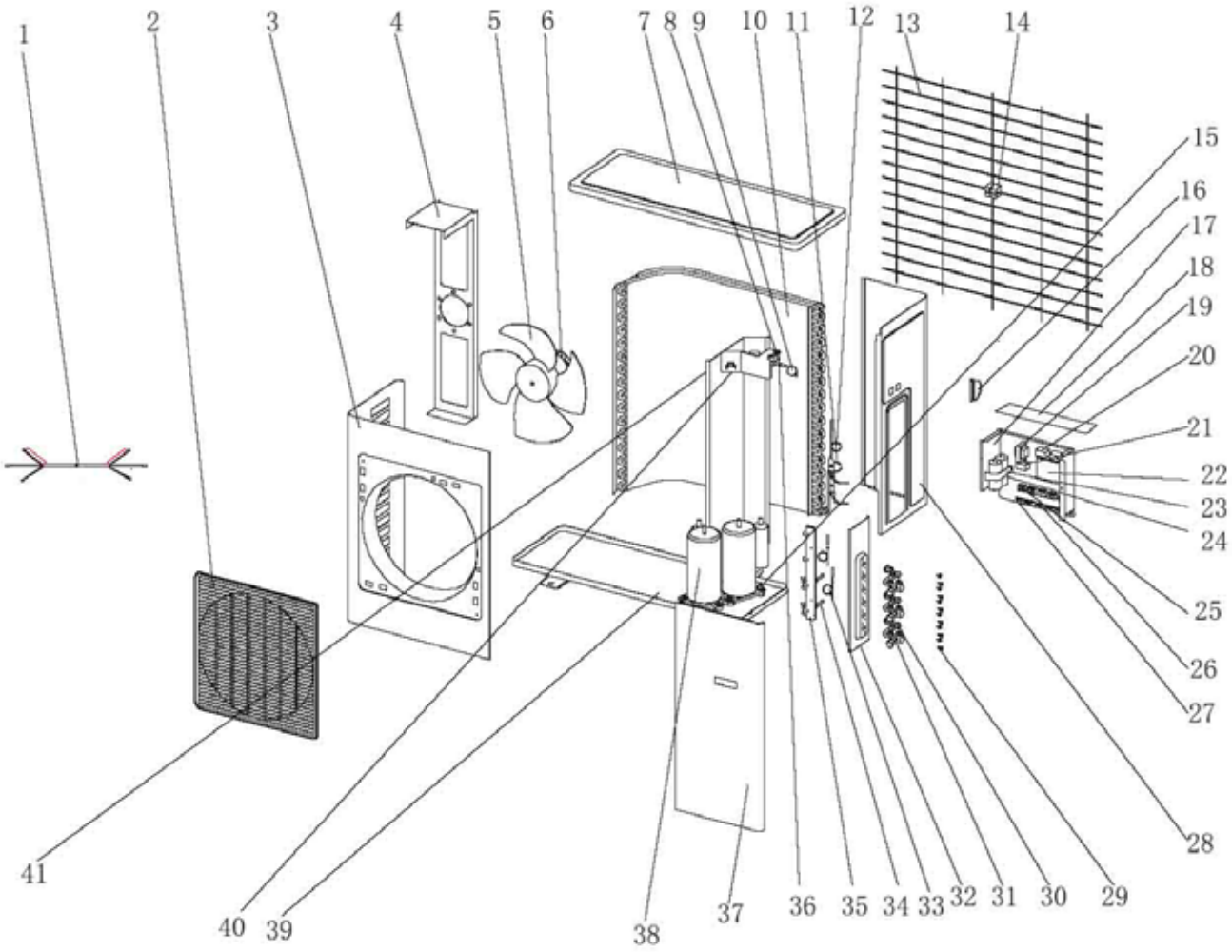
9.7 Explosive view of parts of outdoor unit (one driving two)



9.8 Explosive view of parts of outdoor unit (one driving two)

No.	Name of parts	Code No. of parts	Qty.
		PRO AIR 218 OUT	
1	Taping screw	70140553	16
2	Face cover	22265251	1
3	outer cover	01433031	1
4	Axial flow fan	10335257	1
5	Motor LW68B	15015057	1
6	Motor bracket	01703027	1
7	Condenser assembly.	01103076	1
8	top cover	01255262	1
9	net cover	01473028	1
10	Outdoor pipe temperature sensor (5K)	39000009	1
11	One driving two defrosting board 2F16HS	30112003	1
12	Capacitor CBB61 (2.5uF/450VAC)	33010026	1
13	Electric box	01413003	1
14	Capacitor CBB65 (22.5uF/450VAC)	33000002	2
15	Terminal board 2-8	42011103	3
16	Capacitor Clamp	02143013	1
17	Terminal board RS9413G	42010178	1
18	3-position terminal	42011113	2
19	Four-way valve and fittings	430004002	2
20	Four-way valve	430004021	2
21	valve 3/8"	07100132	2
22	valve 1/4"	07100131	2
23	Rear panel assembly	1303044	1
24	Valve bracket	01713028	1
25	One-way valve	07130103	2
26	Compressor C-RV167H01AA	00100355	2
27	Compressor cushion	76710212	3
28	Middle separator	01233023	1
29	Chassis assembly	01203181	1
30	Handle	26235252	3
31	Front sideboard	01303023	1
32	Rubber-sleeve flexible wire	40020318	1

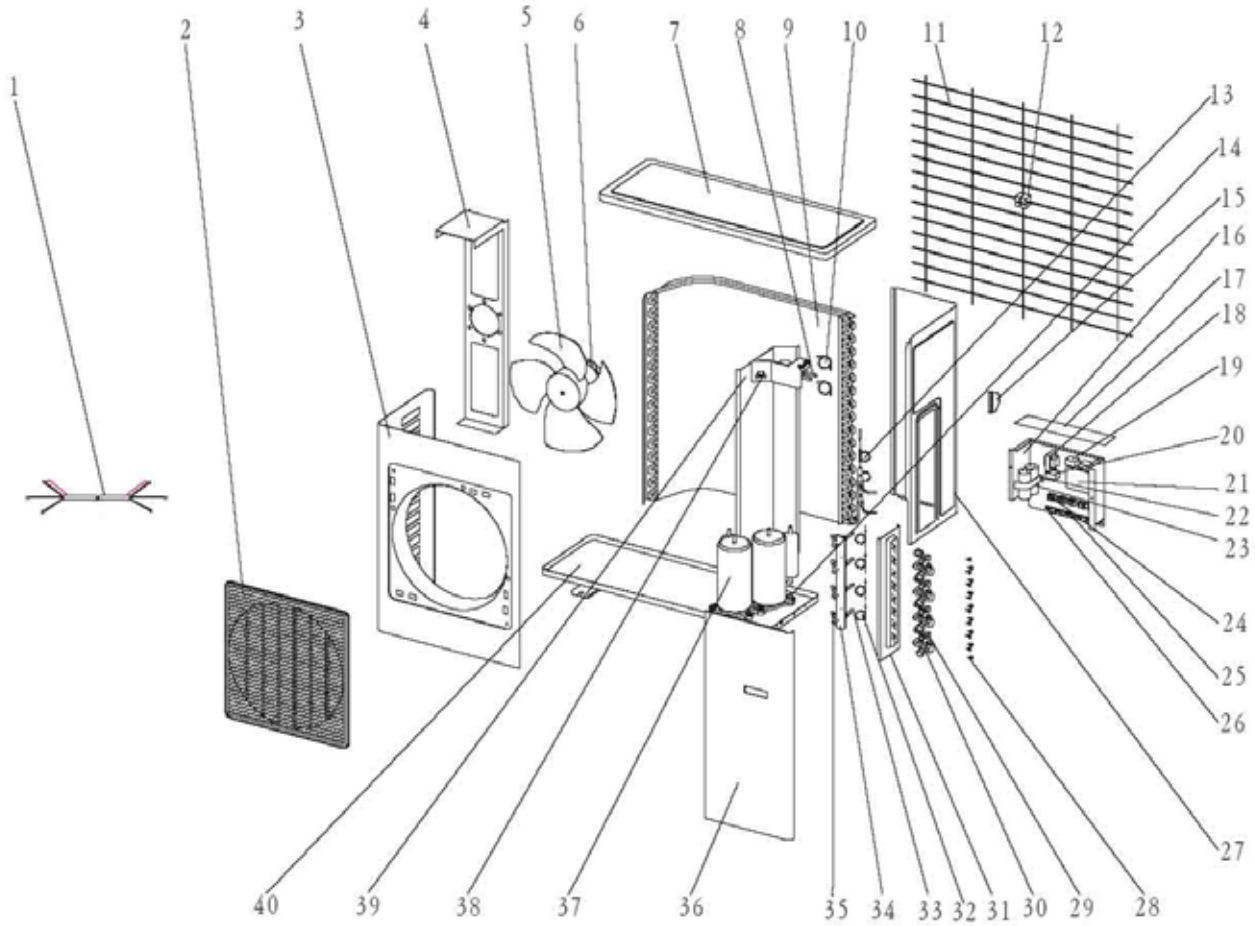
9.9 Explosive view of parts of outdoor unit (one driving three)



9.10 Explosive view of parts of outdoor unit (one driving three)

No.	Name of parts	Code No. of parts	Qty.
		GE AIR 326 OUT	
1	Power cable	40020318	1
2	Face cover	22265251	1
3	outer cover	01435254	1
4	Motor bracket	01705253	1
5	Axial flow fan	10335253	1
6	Motor FW60L	15013063	1
7	top cover assembly	01255260	1
8	Electromagnetism valve FDF2AK	43000055	1
9	Balanced Capillary	03013082	1
10	Condenser (1.8light tube)	01133012	1
11	capillary assembly A	030030641	1
12	capillary assembly 2	03003260	1
13	net cover	01475252	1
14	Net cover pad	/	/
15	anchor bolt of compressor	70210054	6
16	Handle	26235252	3
17	Electric box	01413043	1
18	electric box cover	01413049	1
19	Power transformer SC28B1	43110170	1
20	Terminal board 2-8	42011103	3
21	Capacitor 3uF/450V	33010027	1
22	Main board KQ001	30055001	1
23	Capacitor Clamp	02143013	1
24	Capacitor 25uF/450V	33000017	2
25	Terminal board RS9413G	42010178	1
	Terminal board RS9413	420111041	3
26	Electric wire holder	71010103	3
	Electric wire holder	71010102	1
27	Insulation spacer	70413432	1
28	rear sideboard	01303007	1
29	Taping screw ST4.8X16	70140165	12
30	valve 1/4 ″	07100131	3
31	valve 3/8 ″	07100132	3
32	Valve bracket	01713044	1
33	Capillary	03013357	2
34	Electromagnetism valve FDF2A	43000054	2
35	Electromagnetic valve frame 1	01713034	1
36	Electromagnetic valve fittings	/	/
37	Front sideboard	01305247	1
38	Compressor and auxiliaries	00100353	2
	Compressor overload	00120023	2
	compressor shock absorber gasket	76710228	6
39	Base board parts	01203304	1
40	Electromagnetic valve frame 2	01723009	1
41	Separator assembly	01235253	1

9. 11 Explosive view of parts of outdoor unit (one driving four)



9.12 List of parts of outdoor unit (one driving four)

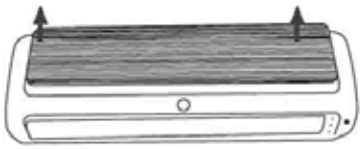
No.	Name of parts	Code No. of parts	Qty.
		GE AIR 428 OUT	
1	Power cable	40020318	1
2	Face cover	22265251	1
3	outer cover	01435254	1
4	Motor bracket	01705253	1
5	Axial flow fan	10335253	1
6	Motor FW60L	15013063	1
7	top cover assembly	01255260	1
8	Electromagnetism valve FDF2AK	43000055	2
9	Condenser (1.8 light tube)	01133012	1
10	Balanced Capillary	03013082	2
11	net cover	01475252	1
12	Net cover pad	/	/
13	capillary assembly 2	03003260	2
14	anchor bolt of compressor	70210054	6
15	Handle	26235252	3
16	Electric box assembly	01403402	1
17	electric box cover	01413049	1
18	Power transformer SC28B1	43110170	1
19	Terminal board 2-8	42011103	3
20	Capacitor 3uF/450V	33010027	1
21	Main board KQ001	30055001	1
22	Capacitor Clamp	02143013	1
23	Capacitor 25uF/450V(440V)	33000018	2
24	Terminal board RS9413G	42010178	1
	Terminal board RS9413	420111041	4
25	Electric wire holder	71010103	4
	Electric wire holder	71010102	1
26	Insulation spacer	70413432	1
27	rear sideboard	01303007	1
28	Taping screw ST4.8X16	70140165	16
29	valve 1/4 ″	07100131	4
30	valve 3/8 ″	07100132	4
31	Valve bracket	01713035	1
32	Capillary	03013357	4
33	Electromagnetic valve FDF2A	43000054	4
34	Electromagnetic valve frame 1	01723008	1
35	Electromagnetic valve fittings	/	/
36	Front sideboard	01305247	1
37	Compressor and auxiliaries	00100353	2
	Compressor overload	00120023	2
	compressor shock absorber gasket	76710228	6
38	Electromagnetic valve frame 2	01723009	1
39	Separator assembly	01235253	1
40	Base board parts	01203304	1

10 Maintenance

Warning

- Turn power off and pull out the power plug before cleaning air conditioner. Or it may cause the electric shock.
- Never dampen the air conditioner, which may cause electric shock. Never rinse the unit with water.
- Volatile liquid like thinner or gasoline would damage the appearance of air conditioner (Only adopt soft dry cloth and wet cloth with neutral scour when cleaning air conditioner appearance)

10.1 Cleaning the front panel



1 Take off the front panel

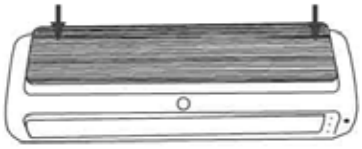
Pull the front panel in the direction as shown by arrow with force to remove the front panel.

2 Clean the front panel

Use a brush, water and neutral detergent to clean and then dry it in the shadow.

3 Install the panel

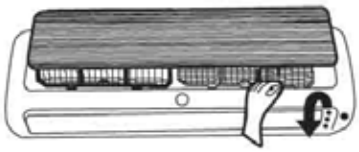
Pull the front panel in the direction as shown by arrow and take care to catch the latch.



10.2 Cleaning the air filter

1 Remove the air filter

Remove the front panel as shown above. Push away the latch at the filter net with hand and take out the filter net as shown in the diagram at the right.

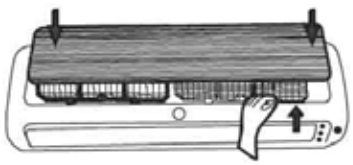


2 Clean the air filters

Use vacuum cleaner or water rinsing to clean the filter. If the air filter is very dirty (such as oil stain), use warm water (below 45 ℃) with neutral detergent dissolved to clean the air filter, and place it in a shady and cool place for natural drying, as shown in the diagram at the right.

3 Install the air filters

Install the air filter properly according to the arrow direction. Let its side that marked with "Front" face you. Then cover and clasp the panel well.



Remarks:

Don't dry the panel or air filter directly under sun burn; don't wash them by hot water which is hotter than 45℃ or burn it on fire (For these would cause fade, fire or deformation)

11 Installation guide

11.1 Select Install Location

① Indoor unit

- The air inlet and outlet vent should be kept far away from obstruction so that air can be blown to the entire room;
- Select a location where it is easy to drain condensed water and connect to the outdoor unit;
- Keep away from heat resource, steam and flammable gas;
- Select a location where it is possible to withstand the weight of indoor unit without increasing the running noise and vibrations.
- Make sure the installation of indoor unit meets requirements of the installation dimensions diagram;
- Make sure there is enough space for maintenance or repair and height between the indoor unit and the floor should be greater than 200 cm;
- Place the unit in a place with at least 1m away from TV, Hi-fi and other home appliances;
- Place the unit in a place where it is easy to pull out the air filters.

② Outdoor unit

- Select a location where the noise and flow of air exhaust will not affect your neighbors
- Select a location with good ventilation to ensure good ventilation for the outdoor unit;
- There should be no obstacles around the outdoor unit, which may block the air inlet or air outlet of the unit;
- Installation location should be able to withstand the weight and vibration of outdoor unit and make installation work proceed safely.
- Select a location without leakage of inflammable or corrosive gases;
- Make sure the installation of outdoor unit meets requirements of the installation dimensions diagram.

Note:

Installing the air conditioner in the following locations might cause malfunction of the air conditioner. If this is unavoidable please contact the special service center of GREE.

- **Location full of machine oil.**
- **Seaside saline and alkali districts.**
- **Location containing sulphurate gas (such as sulphurate hot spring).**
- **Location with high frequency equipment, such as radio equipment, welding equipment and medical equipment**
- **Location with special environmental conditions**

11.2 Installing indoor unit

1 Installing the wall-mounting board

- Use hanging line to find a horizontal position. Since the drainage pipe outlet is on the left side, make the left side on the slightly lower side when adjusting the mounting board.
- Fix the rear panel on the wall by bolt.
- Pull the mounting board after installation to see if it is firm enough. The mounting board should be able to withstand the weight of an adult (60 kg) after installation, and the weight should be evenly shared by each screw.

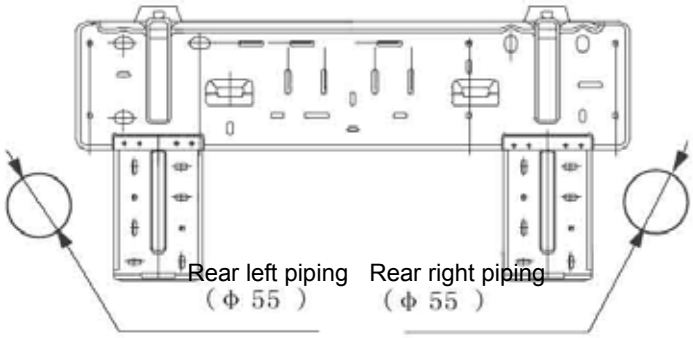


Fig. 11-1

2 Drill the piping hole

- As shown in Fig. 11-2, pipe can go out from 6 directions. Select one of them according to the needs.
- After determining the hole location as shown in Fig. 11-1, drill a downward inclined hole(φ55).
- Wall pipes should be adopted in order to protect tubing and cable from being damaged when they pass through the hole.

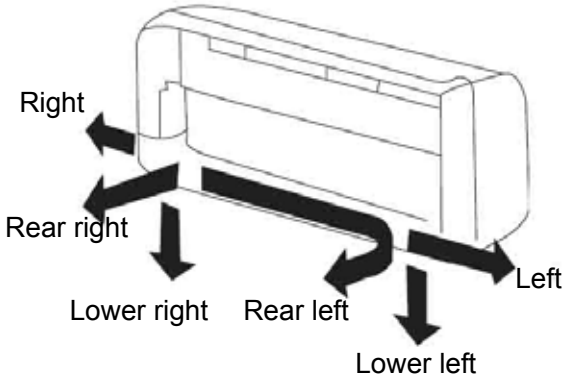


Fig. 11-2

3 nstalling the water drainage pipe

- Drainage hose must be placed at a downward slant for smooth drainage.
- Do not wrench or bent, fluctuate etc, and do not flood its end by water.(as shown in Fig.11-3)
- When long drainage hose goes through the indoor unit, it should be wrapped with insulating materials.

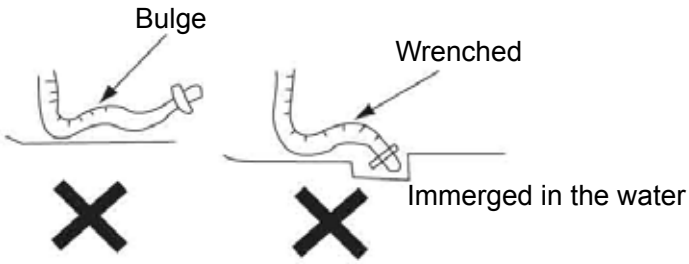


Fig. 11-3

4 Installing the connecting pipe

Connect the connecting pipe with the two outlet pipes of indoor unit and tighten the joint nut of the connecting pipe(refer to “Installation of connecting pipes” below).

Note:

- **Connect the connecting pipe with indoor unit first, and then outdoor unit.**
- **The curving arrangement of the pipe must be done carefully and do not damage the connection pipe.**
- **Do not tighten the joint nut too much, or it will cause leakage.**

5 Electric wiring

1. Open the panel upwardly
2. Disassemble the wire-connection cover board.
3. Pass the Power connecting cord through the entrance hole in the bottom of electric box and bottom case from bottom to top.
4. Connect the blue wire among the Power connecting cords to terminal "N (1) ”on the connecting board, connect the brown wire to the terminal “2”, and connect the yellow green wire (namely ground wire) to the terminal “ ⏚ ”.
5. For the heat-pump models, signal connection line (2×0.75) should be connected to the indoor unit via connector (as shown in Fig. 11-4), and the control line should be securely clamped with the wire clip at the bottom of the body base.
6. Reassemble the wire-connection cover board.
7. Close the panel.

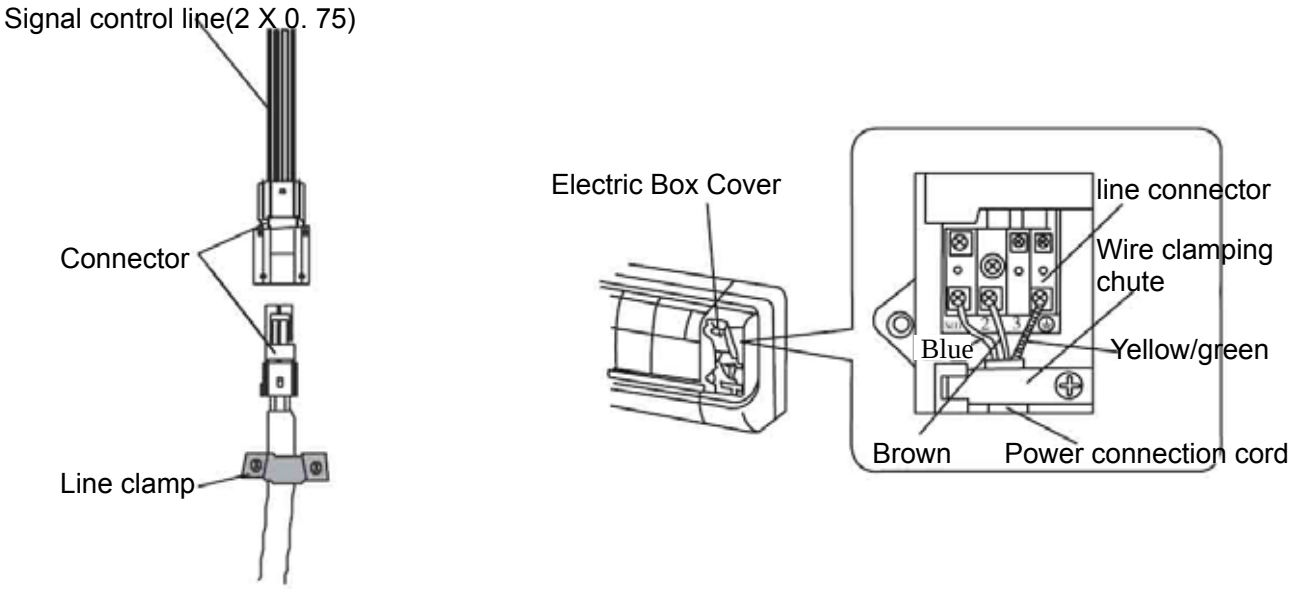


Fig. 11-4

Warning

- **Since one end of the Power connecting cord is already connected to the machine body, the other end of the Power connecting cord may be electrified in the process of power-on test run of single unit; please get done with insulation so as to avoid short circuit or electric shock.**

Note:

- **All electrical installations must be carried out by specialized personnel in accordance with local laws, regulations and this manual.**
- **Rated voltage and special circuit for air conditioner must be adopted for the power supply**
- **Electricity leakage protection switch must be installed.**
- **In case there is damaged power line, to avoid danger it is recommended to ask the manufacturer, aftersale service agent or relative specialists for replacement.**
- **The linear diameter of the power cord should be great enough and damaged power cord and connecting wire must be replaced by special flexible cord.**
- **Installation must be carried out in accordance with the national wiring regulations.**

6 Installing indoor unit

(1) For the piping distribution of indoor unit, please refer to Fig. 11-5 and 11-6. When piping on the left or right side, it is required to cut the tailing portion for piping left on the baseboard of the main unit, as shown in Fig. 11-7.

- When only power cord is led out, it should go through the hole ;
- Cut off tailings 1 when both the connection cord and wire are led out.

(2) Wrap the connecting piping and electric cable properly (as shown in Fig. 11-8) and pass them through the piping hole.

(3) Hang the claw behind the indoor unit on the pothook on the wall rear panel, move the unit left and right to check if the body is firm.

(4) Guarantee that the install height of the indoor unit should above 2.3m from the floor

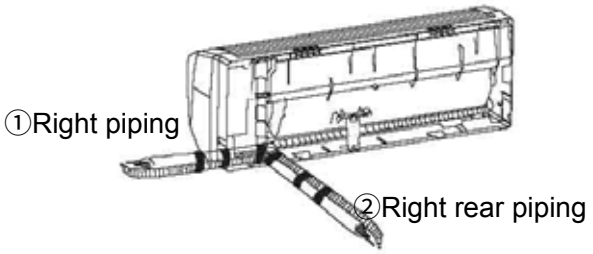


Fig. 11-5

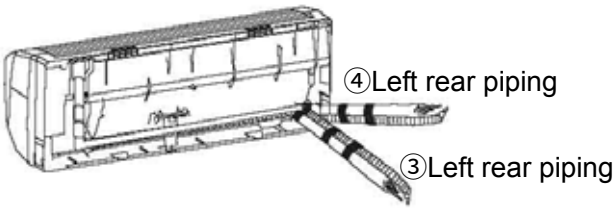


Fig. 11-6

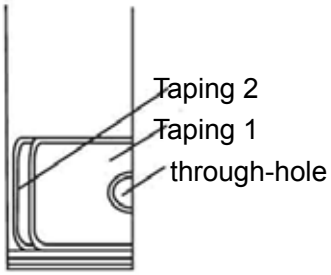


Fig. 11-7

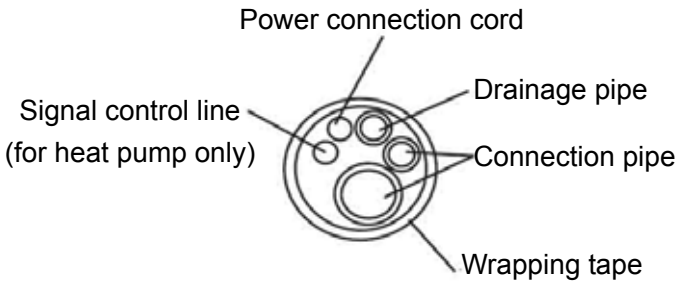


Fig. 11-8

11.3 Installing indoor unit

① Installing the connecting pipe

- The flare end of the connecting pipe coincides with the flare end connector of the corresponding valve.
- Tighten the nut on the connecting pipe with strength and then tighten it by spanner (as shown in right figure).

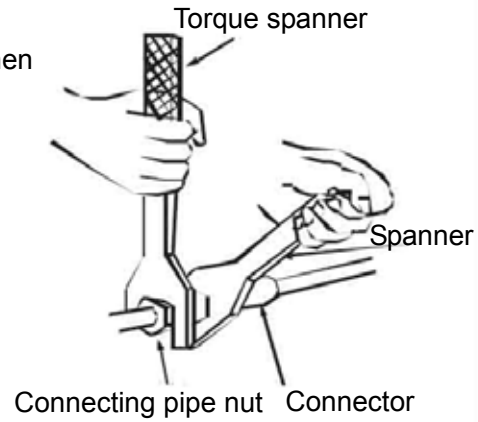


Fig. 11-9

Note: Too great torque will damage the nut

Tightening torque is given as follows:

Hexagon nut(mm)	Tightening torque (N. m)
Φ 6	15～20
Φ 9.5	31～35
Φ 12	50～55

② Distribution line connection

- Remove the lifting handle on right-hand panel of the outdoor unit.
- Remove the wire clip, connect and fix the Power connecting cord to terminals on the line bank, and the wiring layout must be compatible with the indoor unit.
- Use a wire clip to fix the power connecting cord for cooling &heating unit, the control line should be fixed as well, and then connect the corresponding connectors.
- Make sure wires have been fixed firmly.
- Reassemble the lifting handle.
- In case the power cord is not fitted with plug, the clearance between the electrodes of open contact switch must not be less than 3 mm.

Note:

- **Wrong wiring connection will cause failure of some electric components.**
- **Do not pull the wires that are fixed by wire clip.**
- **Do not connect the wires to outdoor unit with excessive length allowance.**

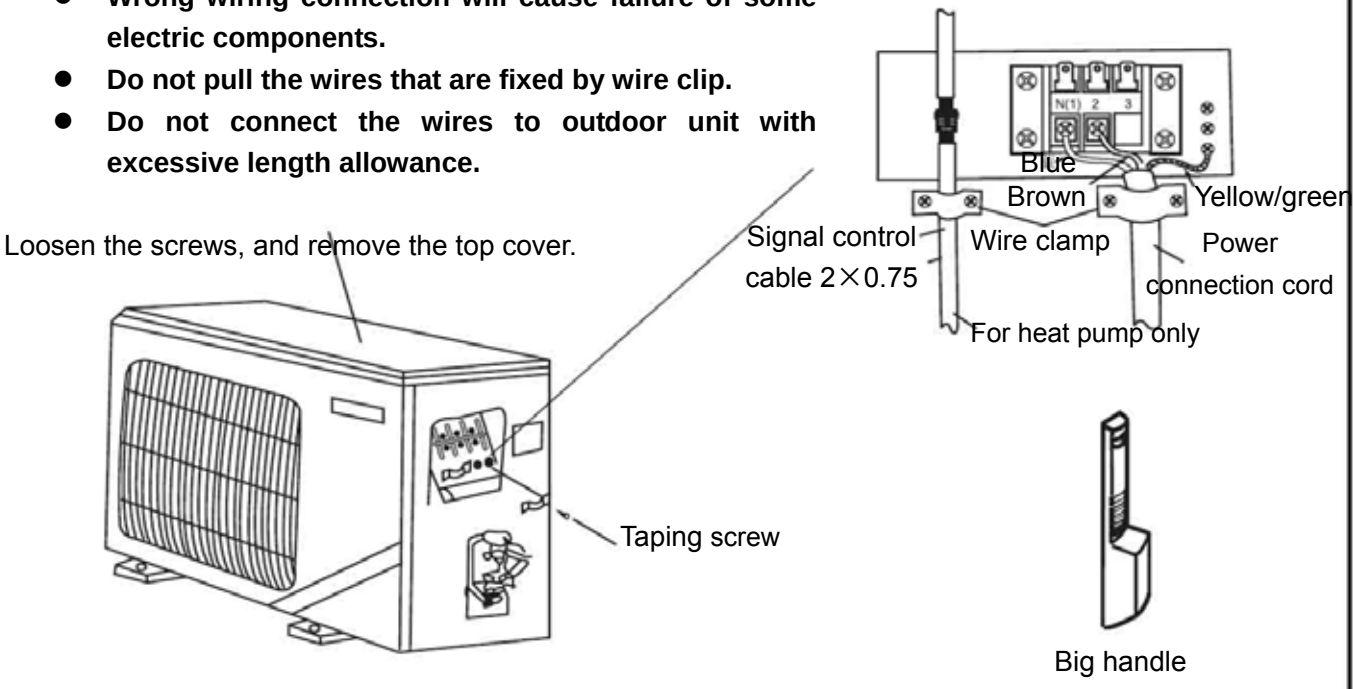


Fig. 11-10

3 Evacuation and leakage check

- Take down the nut cover on the break valve of the outdoor unit.
- Aim at the center of the pipe and fully screw tight the conical nut by hand.
- Use the spanner to screw tight the conical nut.
- Take down the valve nuts on the liquid valve and the gas valve and take down the nuts of the freon injection nozzle.
- Use the hexagon ring spanner to screw off the core of the liquid valve, meanwhile use the screwdriver to open the valve core of the gas valve. At this time, there should be gas coming out.
- After the air discharge lasts about 15 seconds and the secondary refrigerant gas comes out, close the valve core and screw tight the nut of the freon injection nozzle.
- Open the core of liquid valve and gas valve completely(Fig. 11-11）.
- Screw tight the valve cover, then use the suds or the leak detector to check whether there is any leak in the connection between the indoor and outdoor units and the pipes.
- If condition allows, it is available to evacuate air inside the unit from the gas valve core with a vacuum pump (Fig. 11-12)

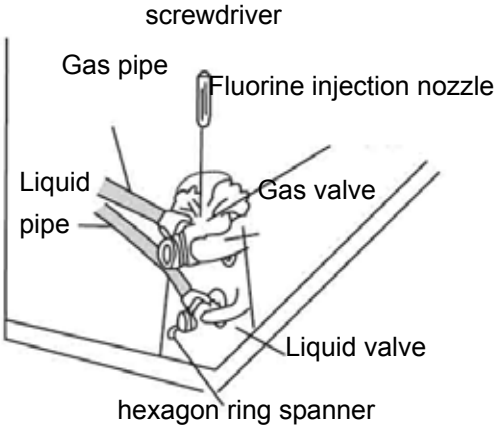


Fig. 11-11

4 Drainage of condenser of outdoor unit (no for cooling only unit)

- When heating, the condensed water and defrost water produced when defrosting by outdoor unit can be drained to proper place through drainage hose.

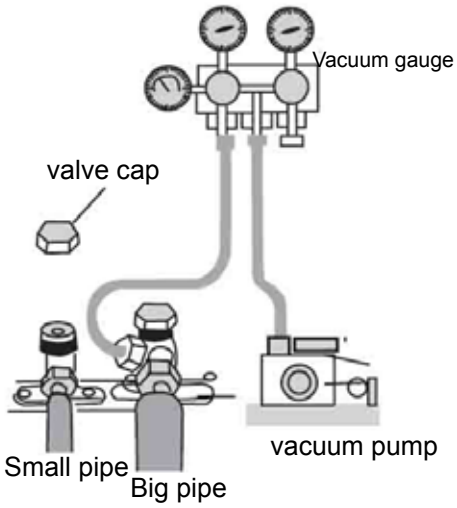


Fig. 11-12

Installation method

- Clasp and install the outdoor drainage connector into the φ25 hole on the baseboard. Then connect the water discharge pipe to the discharge nozzle. The condensed water and the defrosting water may be led to the appropriate place for discharge.

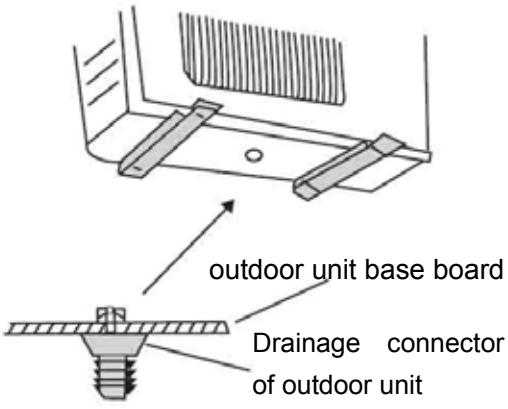


Fig. 11-13

11.4 Trial running and the checking items after installation

(1) Preparation for trial running

1 Preparation for trial running

- Before complete of entire installation, power cannot be turned on.
- Control circuit should be connected correctly, all wire be connected firmly.
- Open cut-off valve of both thick and thin pipe.
- All scattered things, especially scrap and wire etc., should be taken out from the unit.
- Open the panel and set hand switch to "RUN" mode.

2. Trial run method

(1) Turn on the power.

(2) Press On/Off of the remote controller and then press MODE to select working mode such as COOL, DRY, HEAT and FAN to see if operations are normal.

(3) Emergency operation

Emergency running: In case the remote controller is lost, a ball pen or similar object may be used to carry out the following operation:

- Under turn-off state, set the manual switch to AUTO mode and the unit will enter into auto run state. The microcomputer will select automatically heating, cooling and air delivery to achieve a comfortable effect in accordance with the indoor temperature.
- Under running state, set the toggle switch to “STOP” and the air conditioner will stop working

(2) Checking items after installation

Items to be checked	Possible malfunction due to improper installation
Is the installation firm enough?	Unit may drop, shake or emit noise
Is leakage test done?	It may cause insufficient cooling (heating) capacity
Is heat insulation sufficient?	It may cause condensation or dripping
Is the water drainage smooth ?	It may cause condensation or dripping
Is the power supply voltage consistent with the name board of product ?	Failure may occur to the system or components may be burnt.
Is the installation of wire and pipeline correct?	Failure may occur to the system or components may be burnt.
Is the system safely grounded ?	Danger of electric leakage.
Does wire model conform to relevant regulations?	Failure may occur to the system or components may be burnt.
Is air inlet or outlet vent of indoor and outdoor unit blocked?	It may lead to insufficient cooling capacity (heating capacity)
Are the length of refrigerant pipe and the charge amount of refrigerant recorded?	Fail to determine refrigerant charge amount

12 Failure analysis

Failure analysis of frequency converter series

The section is concerning common failure analysis and it can be used for Fengniao DC frrequency converter series. It is adaptable for PRO AIR I109 IN / PRO AIR I109 OUT, PRO AIR I112 IN / PRO AIR I112 OUT. Prior to the analysis, it is available to carry out diagonose in accordance with the code indication of outdoor unit or indication of outdoor indicator (for detail, refer to Section 12.2, failure indication).

Remarks !

1. Preparation before service

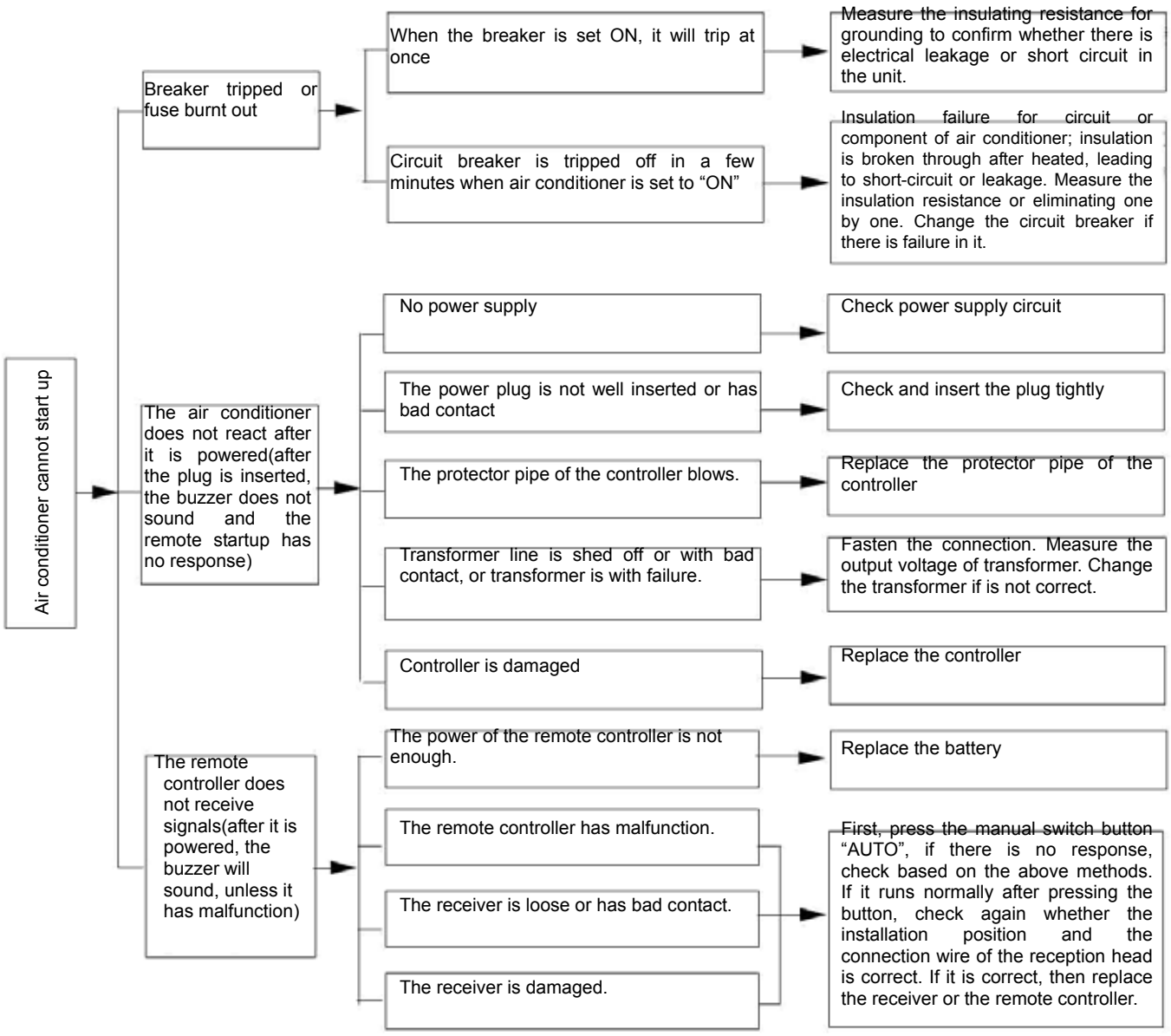
1st step: First of all, it is required to determine the type of frequency converter for service, and to check for the types and code number for main consumable parts, and it is especially true for the controller of outdoor unit.

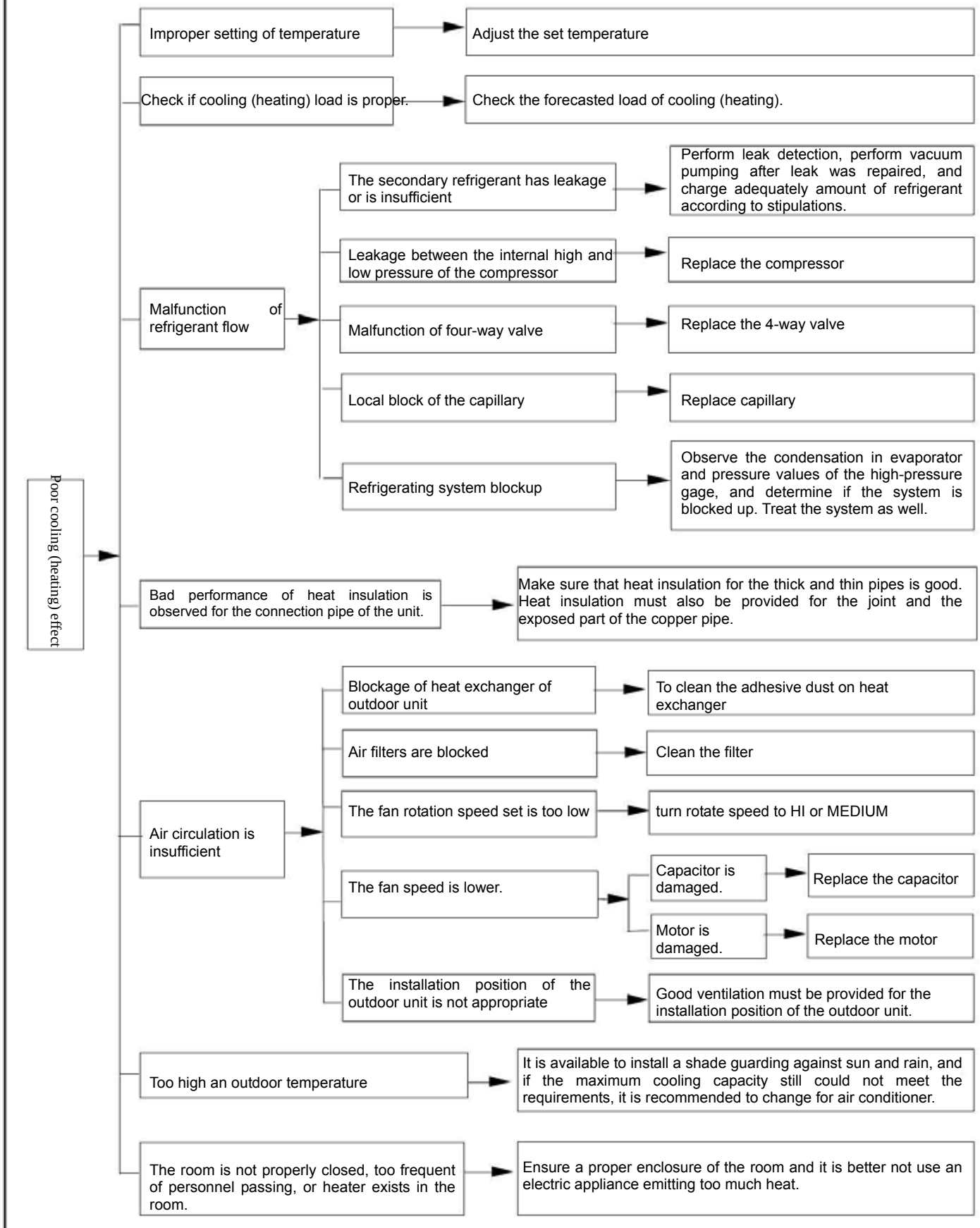
2nd step: Determine prelimiarily the parts and components needed according to the failure symptoms from the users and bring with the service personnel to facilitate the service.

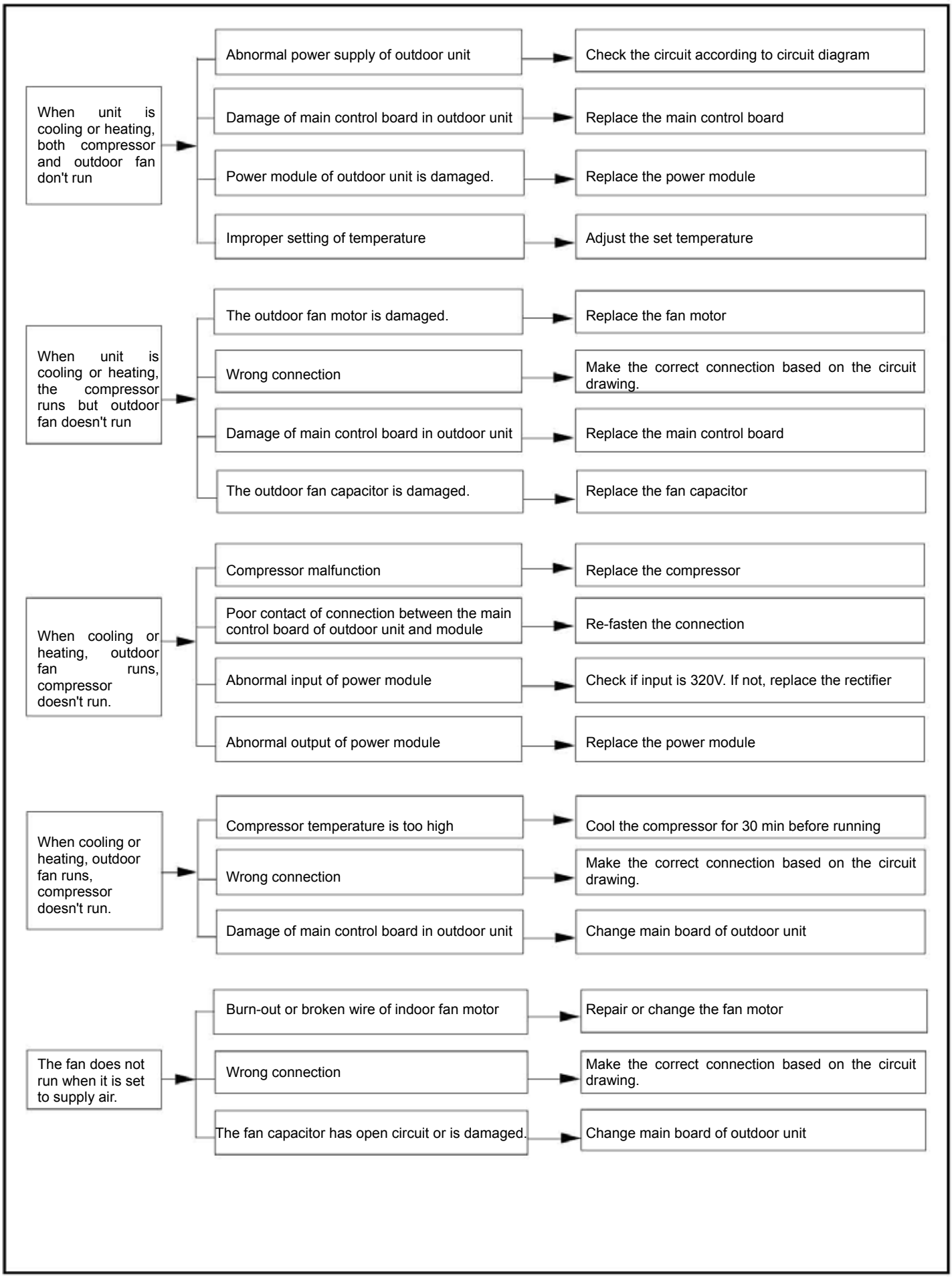
3rd step: In addition to the common tools such as screw driver and spanner, etc. for frequency converter repair, it is required to carry multimeter and current clamp meter.

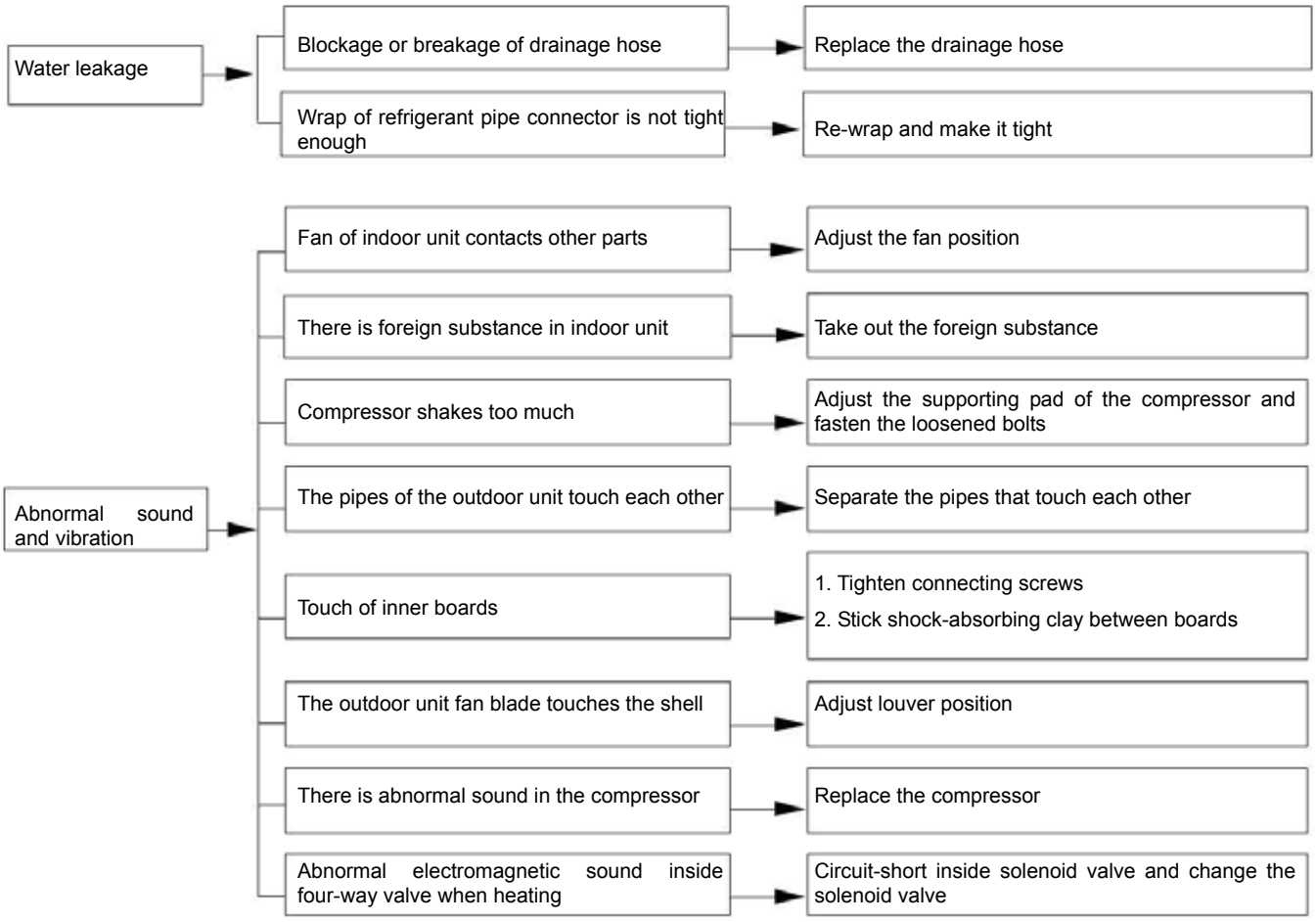
2. Notes for attention for repacement of power module

At present, the company has developed new power module instead of the original TM series power module. Hence, after consuming the stored TM series power modules and distributing fittings for service, it is required to distribute the new multiple power modules corresponding to the original TM series power module, as there are types of 20A and 30A. It is also required to remember that it is necessary to use heat-sink plaster as fittings.


Air conditioner cannot start up
Breaker tripped or fuse burnt out
When the breaker is set ON, it will trip at once
Measure the insulating resistance for grounding to confirm whether there is electrical leakage or short circuit in the unit.
Circuit breaker is tripped off in a few minutes when air conditioner is set to “ON”
Insulation failure for circuit or component of air conditioner; insulation is broken through after heated, leading to short-circuit or leakage. Measure the insulation resistance or eliminating one by one. Change the circuit breaker if there is failure in it.
The air conditioner does not react after it is powered(after the plug is inserted, the buzzer does not sound and the remote startup has no response)
No power supply
Check power supply circuit
The power plug is not well inserted or has bad contact
Check and insert the plug tightly
The protector pipe of the controller blows.
Replace the protector pipe of the controller
Transformer line is shed off or with bad contact, or transformer is with failure.
Fasten the connection. Measure the output voltage of transformer. Change the transformer if is not correct.
Controller is damaged
Replace the controller
The remote controller does not receive signals(after it is powered, the buzzer will sound, unless it has malfunction)
The power of the remote controller is not enough.
Replace the battery
The remote controller has malfunction.
The receiver is loose or has bad contact.
The receiver is damaged.
First, press the manual switch button “AUTO”, if there is no response, check based on the above methods. If it runs normally after pressing the button, check again whether the installation position and the connection wire of the reception head is correct. If it is correct, then replace the receiver or the remote controller.


Poor cooling (heating) effect
Improper setting of temperature
Adjust the set temperature
Check if cooling (heating) load is proper.
Check the forecasted load of cooling (heating).
Malfunction of refrigerant flow
The secondary refrigerant has leakage or is insufficient
Perform leak detection, perform vacuum pumping after leak was repaired, and charge adequately amount of refrigerant according to stipulations.
Leakage between the internal high and low pressure of the compressor
Replace the compressor
Malfunction of four-way valve
Replace the 4-way valve
Local block of the capillary
Replace capillary
Refrigerating system blockup
Observe the condensation in evaporator and pressure values of the high-pressure gage, and determine if the system is blocked up. Treat the system as well.
Bad performance of heat insulation is observed for the connection pipe of the unit.
Make sure that heat insulation for the thick and thin pipes is good. Heat insulation must also be provided for the joint and the exposed part of the copper pipe.
Air circulation is insufficient
Blockage of heat exchanger of outdoor unit
To clean the adhesive dust on heat exchanger
Air filters are blocked
Clean the filter
The fan rotation speed set is too low
turn rotate speed to HI or MEDIUM
The fan speed is lower.
Capacitor is damaged.
Replace the capacitor
Motor is damaged.
Replace the motor
The installation position of the outdoor unit is not appropriate
Good ventilation must be provided for the installation position of the outdoor unit.
Too high an outdoor temperature
It is available to install a shade guarding against sun and rain, and if the maximum cooling capacity still could not meet the requirements, it is recommended to change for air conditioner.
The room is not properly closed, too frequent of personnel passing, or heater exists in the room.
Ensure a proper enclosure of the room and it is better not use an electric appliance emitting too much heat.

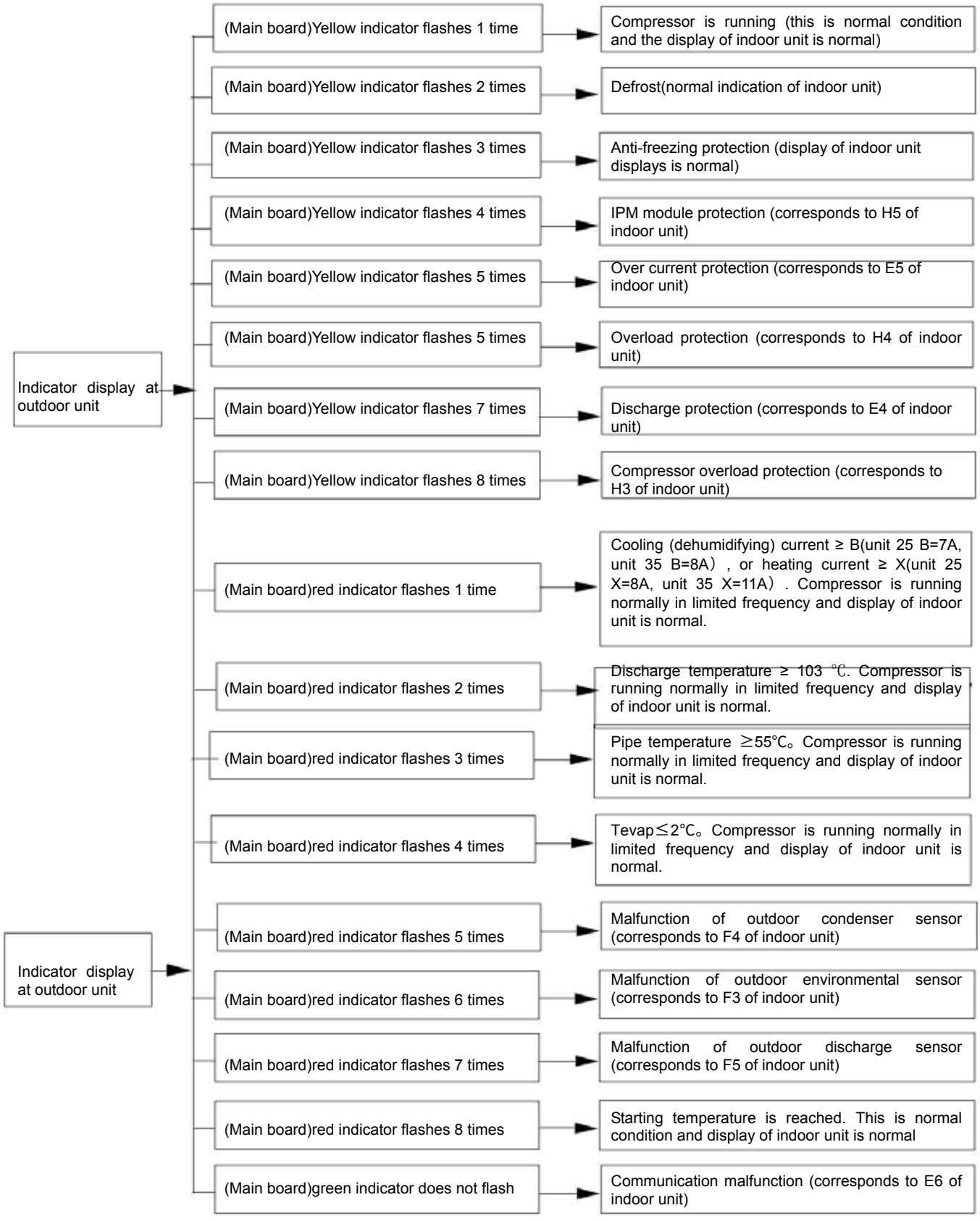

When unit is cooling or heating, both compressor and outdoor fan don't run
Abnormal power supply of outdoor unit
Check the circuit according to circuit diagram
Damage of main control board in outdoor unit
Replace the main control board
Power module of outdoor unit is damaged.
Replace the power module
Improper setting of temperature
Adjust the set temperature
When unit is cooling or heating, the compressor runs but outdoor fan doesn't run
The outdoor fan motor is damaged.
Replace the fan motor
Wrong connection
Make the correct connection based on the circuit drawing.
Damage of main control board in outdoor unit
Replace the main control board
The outdoor fan capacitor is damaged.
Replace the fan capacitor
When cooling or heating, outdoor fan runs, compressor doesn't run.
Compressor malfunction
Replace the compressor
Poor contact of connection between the main control board of outdoor unit and module
Re-fasten the connection
Abnormal input of power module
Check if input is 320V. If not, replace the rectifier
Abnormal output of power module
Replace the power module
When cooling or heating, outdoor fan runs, compressor doesn't run.
Compressor temperature is too high
Cool the compressor for 30 min before running
Wrong connection
Make the correct connection based on the circuit drawing.
Damage of main control board in outdoor unit
Change main board of outdoor unit
The fan does not run when it is set to supply air.
Burn-out or broken wire of indoor fan motor
Repair or change the fan motor
Wrong connection
Make the correct connection based on the circuit drawing.
The fan capacitor has open circuit or is damaged.
Change main board of outdoor unit


Water leakage
Blockage or breakage of drainage hose
Replace the drainage hose
Wrap of refrigerant pipe connector is not tight enough
Re-wrap and make it tight
Abnormal sound and vibration
Fan of indoor unit contacts other parts
Adjust the fan position
There is foreign substance in indoor unit
Take out the foreign substance
Compressor shakes too much
Adjust the supporting pad of the compressor and fasten the loosened bolts
The pipes of the outdoor unit touch each other
Separate the pipes that touch each other
Touch of inner boards
1. Tighten connecting screws
2. Stick shock-absorbing clay between boards
The outdoor unit fan blade touches the shell
Adjust louver position
There is abnormal sound in the compressor
Replace the compressor
Abnormal electromagnetic sound inside four-way valve when heating
Circuit-short inside solenoid valve and change the solenoid valve

Note:

1. When repairing, before the voltage between module PN is measured below 50V, do not touch any terminal to avoid electric shock.
2. When replacing power module and rectifier, be sure to spread the radiating paste evenly.

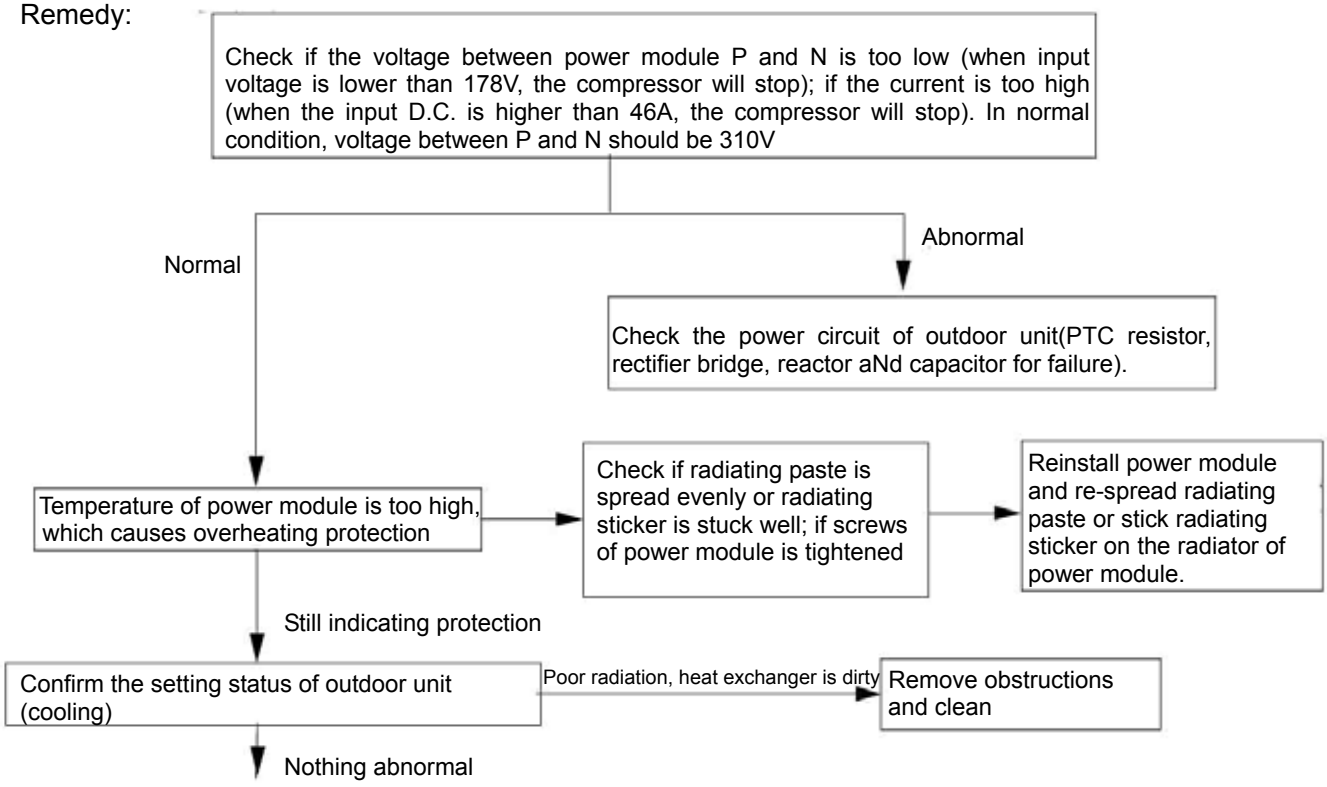
Failure indication section

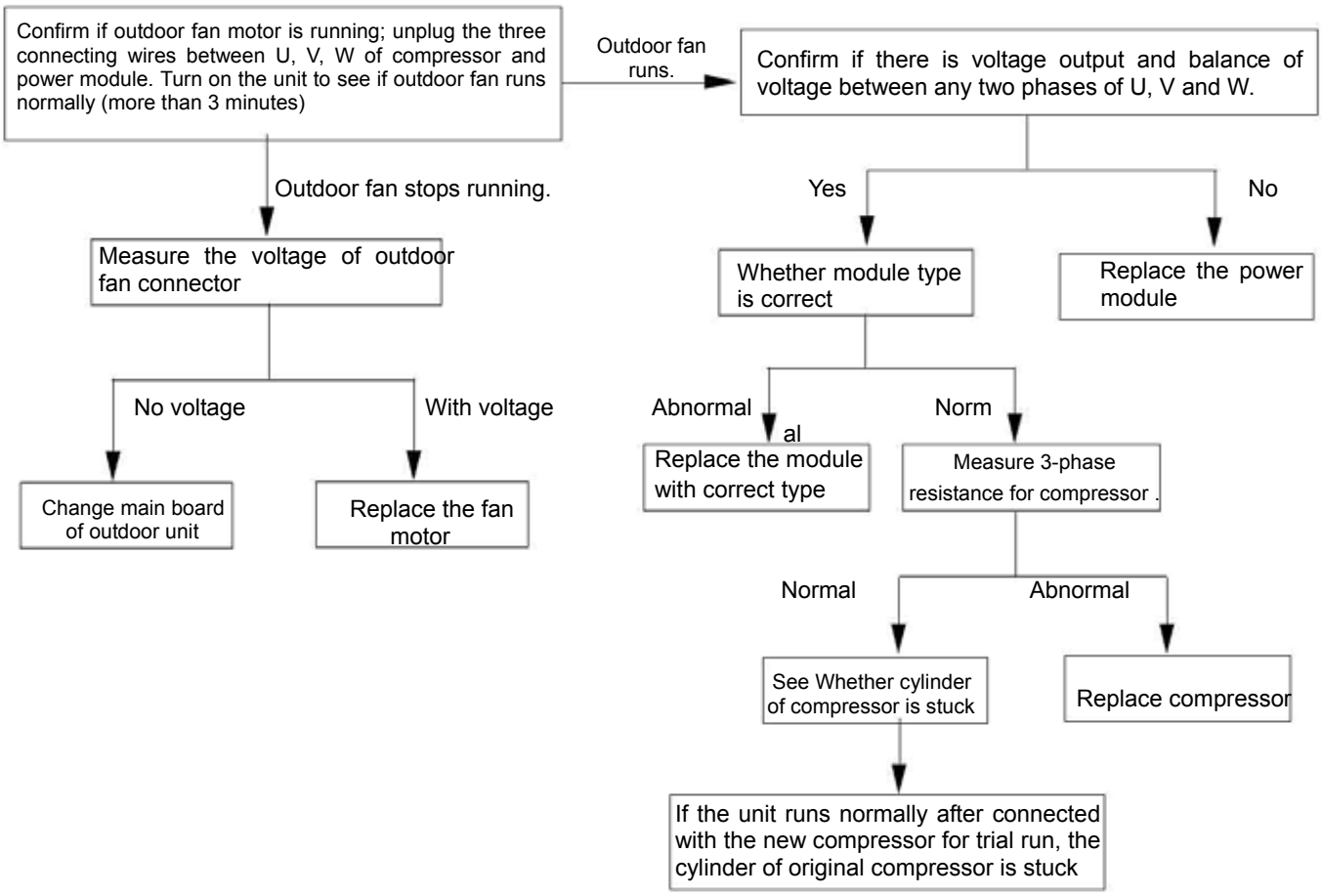

Indicator display at outdoor unit
(Main board)Yellow indicator flashes 1 time
Compressor is running (this is normal condition and the display of indoor unit is normal)
(Main board)Yellow indicator flashes 2 times
Defrost(normal indication of indoor unit)
(Main board)Yellow indicator flashes 3 times
Anti-freezing protection (display of indoor unit displays is normal)
(Main board)Yellow indicator flashes 4 times
IPM module protection (corresponds to H5 of indoor unit)
(Main board)Yellow indicator flashes 5 times
Over current protection (corresponds to E5 of indoor unit)
(Main board)Yellow indicator flashes 5 times
Overload protection (corresponds to H4 of indoor unit)
(Main board)Yellow indicator flashes 7 times
Discharge protection (corresponds to E4 of indoor unit)
(Main board)Yellow indicator flashes 8 times
Compressor overload protection (corresponds to H3 of indoor unit)
Indicator display at outdoor unit
(Main board)red indicator flashes 1 time
Cooling (dehumidifying) current ≥ B(unit 25 B=7A, unit 35 B=8A） , or heating current ≥ X(unit 25 X=8A, unit 35 X=11A） . Compressor is running normally in limited frequency and display of indoor unit is normal.
(Main board)red indicator flashes 2 times
Discharge temperature ≥ 103 ℃. Compressor is running normally in limited frequency and display of indoor unit is normal.
(Main board)red indicator flashes 3 times
Pipe temperature ≥55°C。Compressor is running normally in limited frequency and display of indoor unit is normal.
(Main board)red indicator flashes 4 times
Tevap≤2°C。Compressor is running normally in limited frequency and display of indoor unit is normal.
(Main board)red indicator flashes 5 times
Malfunction of outdoor condenser sensor (corresponds to F4 of indoor unit)
(Main board)red indicator flashes 6 times
Malfunction of outdoor environmental sensor (corresponds to F3 of indoor unit)
(Main board)red indicator flashes 7 times
Malfunction of outdoor discharge sensor (corresponds to F5 of indoor unit)
(Main board)red indicator flashes 8 times
Starting temperature is reached. This is normal condition and display of indoor unit is normal
(Main board)green indicator does not flash
Communication malfunction (corresponds to E6 of indoor unit)

Analysis or treatment of some of the display failures

1. Compressor discharge protection
   Possible causes: coolant not sufficient, air filter net is blocked, condenser is of poor ventilation or air flow is shorted, there is non-condensed gas in the system (such as air, water, etc.), capillary assembly (including filter) blockage, inner leakage in the 4-way valve, leading to mistaken action; compressor itself is with failure, failure is with protection relay itself, failure in exhaust temperature sensor and too high an outdoor temperature.
   Remedy: refer to the malfunction analysis in the above section.
2. Low voltage over current protection:
   Possible reason: Sudden drop of supply voltage.
3 Communication Malfunction:
   Remedy: Check if communication signal cable is connected reliably
4 Open or short circuit with temperature sensor:
   Remedy: Check whether sensor is normal, connected with the corresponding position on the controller and if damage of lead wire is found
5. Compressor over load protection:
   Possible reasons: shortage of refrigerant; blockage of capillary and increase of suction temperature; improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.
   Remedy: adjust the coolant amount, change capillary, replace the compressor, check the compressor with a multimeter and see if it conducts when it is not over heated, and replace the protector if it does not conduct.
6. System malfunction
   i.e. overload protection. When pipe temperature (Check the temperature of outdoor heat exchanger when cooling and check the temperature of indoor heat exchanger when heating) is too high, protection will be activated.
   Possible causes: too high an outdoor temperature when cooling, air ventilation outdoor is not sufficient or failure in coolant flow.
   Remedy: refer to the malfunction analysis in the above section.
7. The cooling pressure is about 0.9Mpa and the heating pressure is about 3.0 Mpa when the frequency converter split system is operating normally. If the pressure is lower than the normal range, there is possibly leakage. If it is higher than the normal range, it is possibly due to too much coolant or air mixing in the system. The pressure also depends on various conditions.
8. IPM module protection(H5):

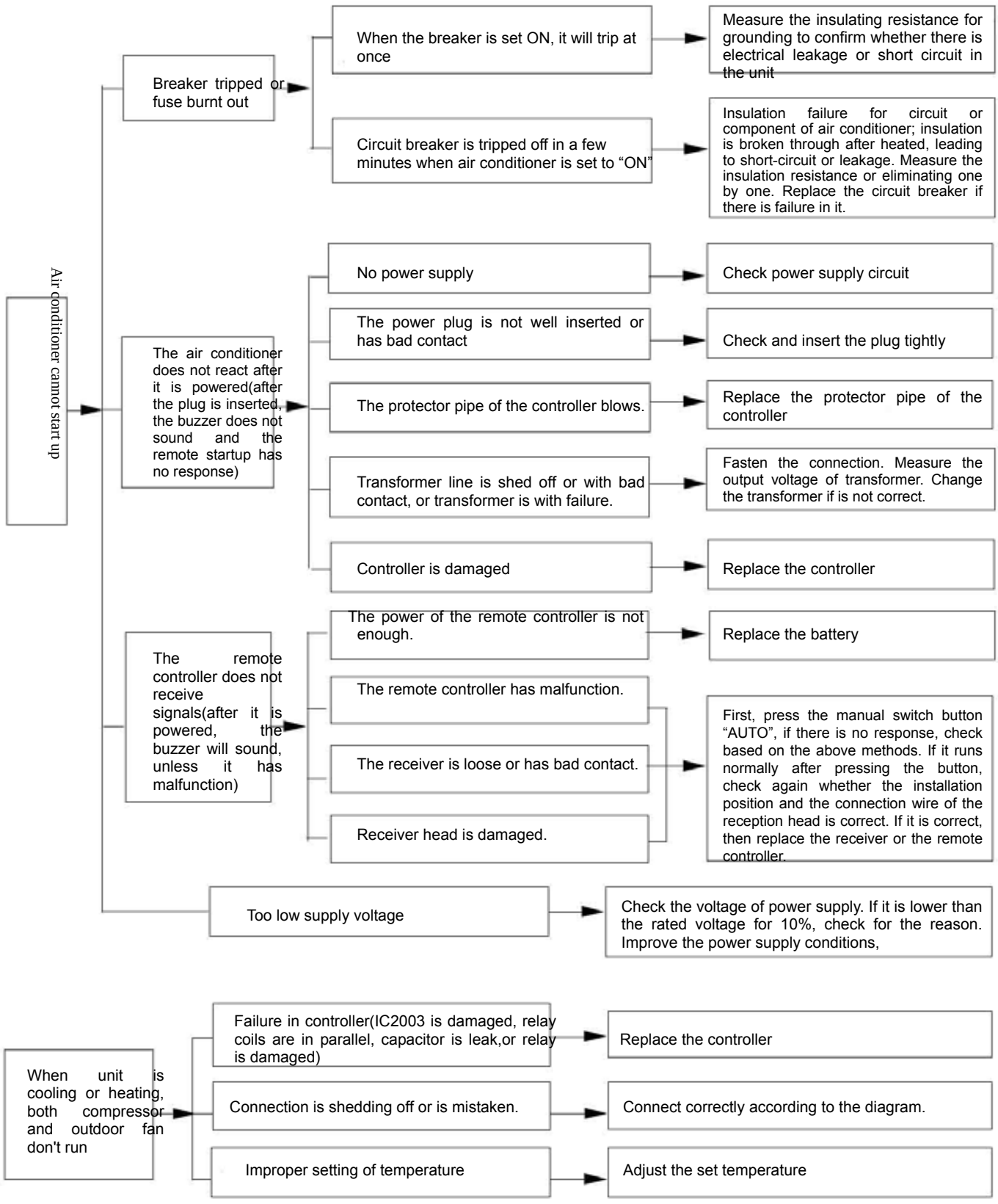
Remedy:

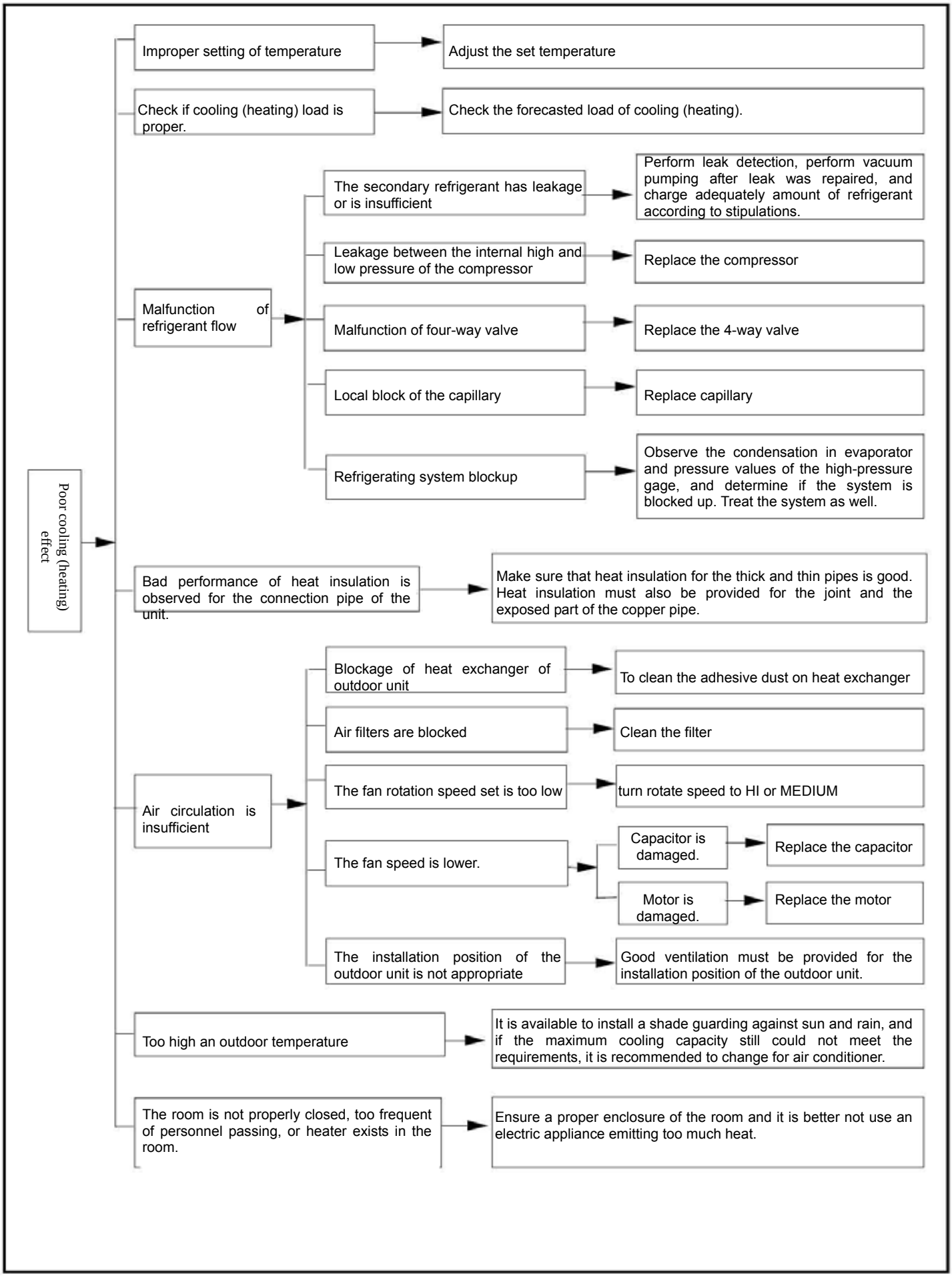

Check if the voltage between power module P and N is too low (when input voltage is lower than 178V, the compressor will stop); if the current is too high (when the input D.C. is higher than 46A, the compressor will stop). In normal condition, voltage between P and N should be 310V
Abnormal
Normal
Check the power circuit of outdoor unit(PTC resistor, rectifier bridge, reactor aNd capacitor for failure).
Temperature of power module is too high, which causes overheating protection
Check if radiating paste is spread evenly or radiating sticker is stuck well; if screws of power module is tightened
Reinstall power module and re-spread radiating paste or stick radiating sticker on the radiator of power module.
Still indicating protection
Confirm the setting status of outdoor unit (cooling)
Poor radiation, heat exchanger is dirty
Remove obstructions and clean
Nothing abnormal

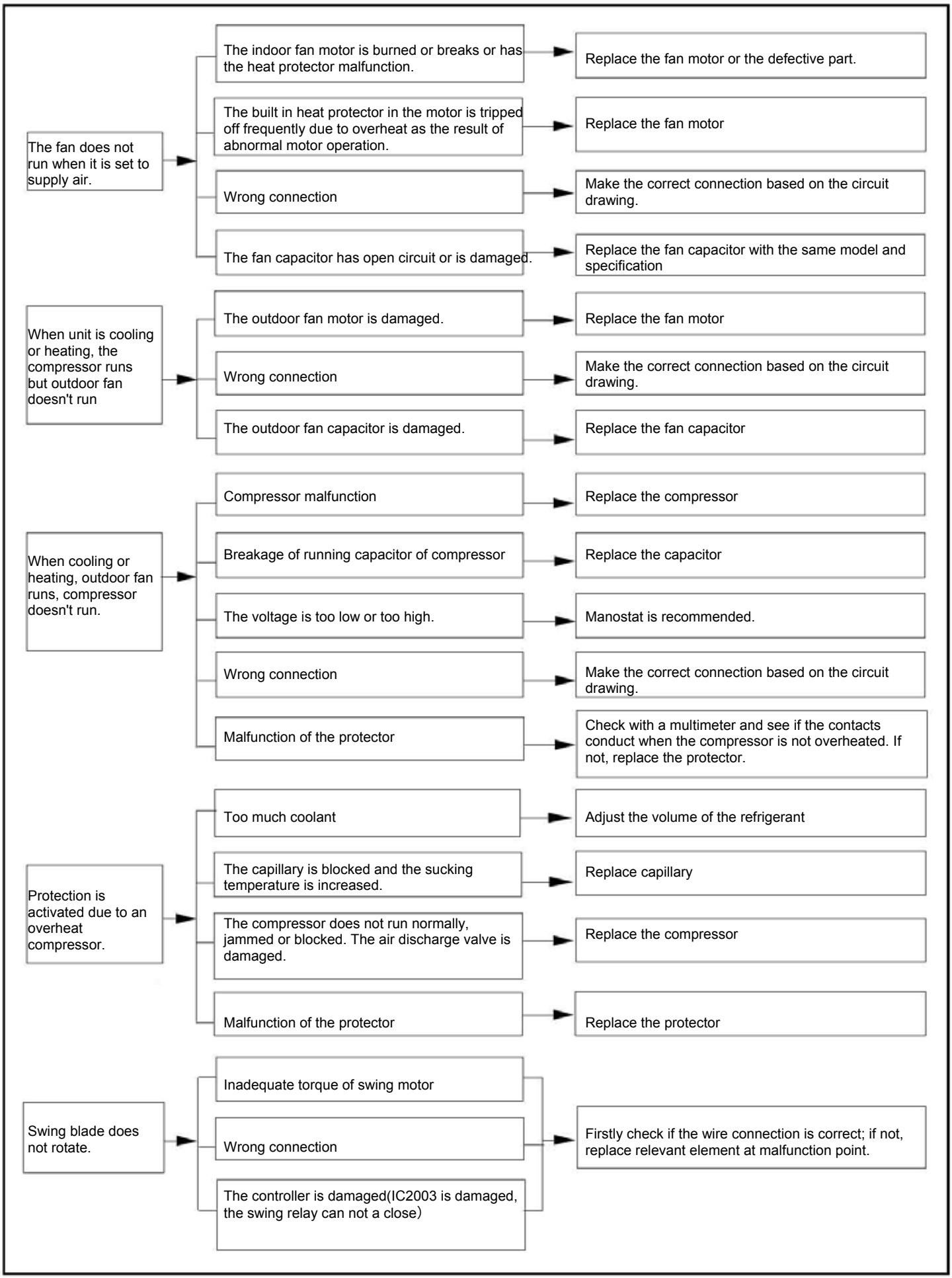

Confirm if outdoor fan motor is running; unplug the three connecting wires between U, V, W of compressor and power module. Turn on the unit to see if outdoor fan runs normally (more than 3 minutes)
Outdoor fan runs.
Confirm if there is voltage output and balance of voltage between any two phases of U, V and W.
Outdoor fan stops running.
Yes
No
Measure the voltage of outdoor fan connector
Whether module type is correct
Replace the power module
No voltage
With voltage
Abnormal
Norm
Change main board of outdoor unit
Replace the fan motor
Replace the module with correct type
Measure 3-phase resistance for compressor .
Normal
Abnormal
See Whether cylinder of compressor is stuck
Replace compressor
If the unit runs normally after connected with the new compressor for trial run, the cylinder of original compressor is stuck

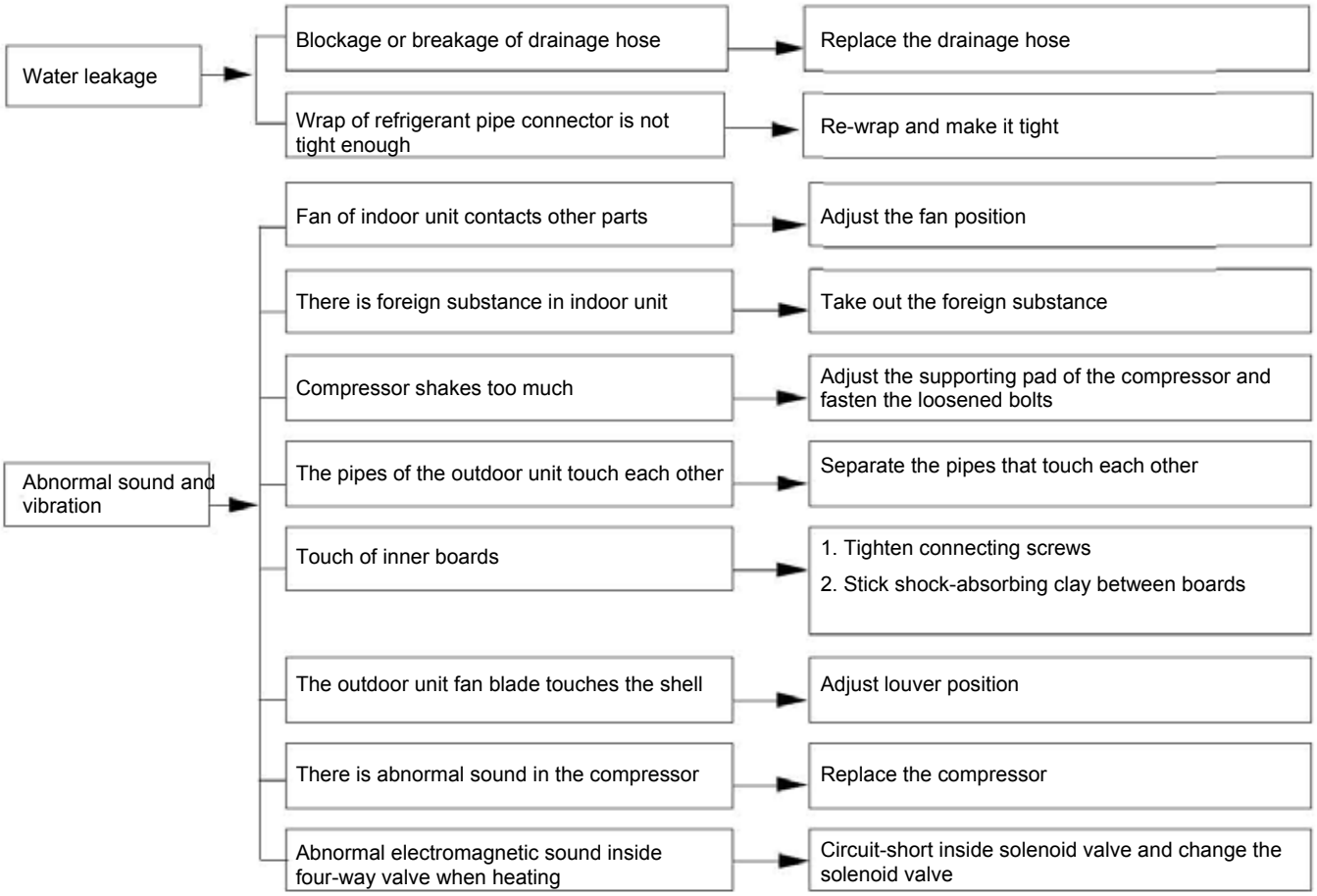
12.2 Failure analysis of common types of systems

Adaptable for systems except PRO AIR I109 IN / PRO AIR I109 OUT, PRO AIR I112 IN / PRO AIR I112 OUT


Air conditioner cannot start up
Breaker tripped or fuse burnt out
When the breaker is set ON, it will trip at once
Measure the insulating resistance for grounding to confirm whether there is electrical leakage or short circuit in the unit
Circuit breaker is tripped off in a few minutes when air conditioner is set to "ON"
Insulation failure for circuit or component of air conditioner; insulation is broken through after heated, leading to short-circuit or leakage. Measure the insulation resistance or eliminating one by one. Replace the circuit breaker if there is failure in it.
The air conditioner does not react after it is powered(after the plug is inserted, the buzzer does not sound and the remote startup has no response)
No power supply
Check power supply circuit
The power plug is not well inserted or has bad contact
Check and insert the plug tightly
The protector pipe of the controller blows.
Replace the protector pipe of the controller
Transformer line is shed off or with bad contact, or transformer is with failure.
Fasten the connection. Measure the output voltage of transformer. Change the transformer if is not correct.
Controller is damaged
Replace the controller
The remote controller does not receive signals(after it is powered, the buzzer will sound, unless it has malfunction)
The power of the remote controller is not enough.
Replace the battery
The remote controller has malfunction.
The receiver is loose or has bad contact.
Receiver head is damaged.
First, press the manual switch button "AUTO", if there is no response, check based on the above methods. If it runs normally after pressing the button, check again whether the installation position and the connection wire of the reception head is correct. If it is correct, then replace the receiver or the remote controller.
Too low supply voltage
Check the voltage of power supply. If it is lower than the rated voltage for 10%, check for the reason. Improve the power supply conditions,
When unit is cooling or heating, both compressor and outdoor fan don't run
Failure in controller(IC2003 is damaged, relay coils are in parallel, capacitor is leak,or relay is damaged)
Replace the controller
Connection is shedding off or is mistaken.
Connect correctly according to the diagram.
Improper setting of temperature
Adjust the set temperature


Poor cooling (heating) effect
Improper setting of temperature
Adjust the set temperature
Check if cooling (heating) load is proper.
Check the forecasted load of cooling (heating).
Malfunction of refrigerant flow
The secondary refrigerant has leakage or is insufficient
Perform leak detection, perform vacuum pumping after leak was repaired, and charge adequately amount of refrigerant according to stipulations.
Leakage between the internal high and low pressure of the compressor
Replace the compressor
Malfunction of four-way valve
Replace the 4-way valve
Local block of the capillary
Replace capillary
Refrigerating system blockup
Observe the condensation in evaporator and pressure values of the high-pressure gage, and determine if the system is blocked up. Treat the system as well.
Bad performance of heat insulation is observed for the connection pipe of the unit.
Make sure that heat insulation for the thick and thin pipes is good. Heat insulation must also be provided for the joint and the exposed part of the copper pipe.
Air circulation is insufficient
Blockage of heat exchanger of outdoor unit
To clean the adhesive dust on heat exchanger
Air filters are blocked
Clean the filter
The fan rotation speed set is too low
turn rotate speed to HI or MEDIUM
The fan speed is lower.
Capacitor is damaged.
Replace the capacitor
Motor is damaged.
Replace the motor
The installation position of the outdoor unit is not appropriate
Good ventilation must be provided for the installation position of the outdoor unit.
Too high an outdoor temperature
It is available to install a shade guarding against sun and rain, and if the maximum cooling capacity still could not meet the requirements, it is recommended to change for air conditioner.
The room is not properly closed, too frequent of personnel passing, or heater exists in the room.
Ensure a proper enclosure of the room and it is better not use an electric appliance emitting too much heat.


The fan does not run when it is set to supply air.
The indoor fan motor is burned or breaks or has the heat protector malfunction.
Replace the fan motor or the defective part.
The built in heat protector in the motor is tripped off frequently due to overheat as the result of abnormal motor operation.
Replace the fan motor
Wrong connection
Make the correct connection based on the circuit drawing.
The fan capacitor has open circuit or is damaged.
Replace the fan capacitor with the same model and specification
When unit is cooling or heating, the compressor runs but outdoor fan doesn't run
The outdoor fan motor is damaged.
Replace the fan motor
Wrong connection
Make the correct connection based on the circuit drawing.
The outdoor fan capacitor is damaged.
Replace the fan capacitor
When cooling or heating, outdoor fan runs, compressor doesn't run.
Compressor malfunction
Replace the compressor
Breakage of running capacitor of compressor
Replace the capacitor
The voltage is too low or too high.
Manostat is recommended.
Wrong connection
Make the correct connection based on the circuit drawing.
Malfunction of the protector
Check with a multimeter and see if the contacts conduct when the compressor is not overheated. If not, replace the protector.
Protection is activated due to an overheat compressor.
Too much coolant
Adjust the volume of the refrigerant
The capillary is blocked and the sucking temperature is increased.
Replace capillary
The compressor does not run normally, jammed or blocked. The air discharge valve is damaged.
Replace the compressor
Malfunction of the protector
Replace the protector
Swing blade does not rotate.
Inadequate torque of swing motor
Wrong connection
The controller is damaged(IC2003 is damaged, the swing relay can not a close）
Firstly check if the wire connection is correct; if not, replace relevant element at malfunction point.


Water leakage
Blockage or breakage of drainage hose
Replace the drainage hose
Wrap of refrigerant pipe connector is not tight enough
Re-wrap and make it tight
Abnormal sound and vibration
Fan of indoor unit contacts other parts
Adjust the fan position
There is foreign substance in indoor unit
Take out the foreign substance
Compressor shakes too much
Adjust the supporting pad of the compressor and fasten the loosened bolts
The pipes of the outdoor unit touch each other
Separate the pipes that touch each other
Touch of inner boards
1. Tighten connecting screws
2. Stick shock-absorbing clay between boards
The outdoor unit fan blade touches the shell
Adjust louver position
There is abnormal sound in the compressor
Replace the compressor
Abnormal electromagnetic sound inside four-way valve when heating
Circuit-short inside solenoid valve and change the solenoid valve